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# Y-RIB and CONCRETE ON THE FARM



**TRUSSED CONCRETE STEEL CO.**  
**DETROIT, MICHIGAN, U.S.A.**



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*Trussed Steel Building*

# Hy=Rib and Concrete on the Farm

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SHOWING IN COMPLETE DETAIL  
HOW TO CONSTRUCT PERMANENT  
FIREPROOF STRUCTURES AT  
VERY LOW COST

A VALUABLE GUIDE FOR  
ALL BUILDING WORK



Price 50 cents

*Farm Building Department*  
**Trussed Concrete Steel Co.**  
Detroit, Michigan





## HY-RIB AND CONCRETE ON THE FARM

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Concrete is recognized by the practical farmer of today as the most satisfactory material for all forms of building and construction work, just as the most experienced builders in all places have adopted it for their immense buildings, bridges, and other structures. The advantages of concrete are well-known; absolute protection against fire and decay; absence of repairs; saving in insurance; lengthened life; cleanliness and vermin-proofness; simplicity and ease of construction; great economy.

Farmers, with their limited means of extinguishing fires, have long been looking for inexpensive fireproof construction that they could readily erect themselves. Our Hy-Rib sheathing at last makes possible low cost, fireproof construction and makes the erection of concrete very simple for the farmer. Hy-Rib does away with all centering and form work and thus saves one of the most difficult and expensive parts of all concrete construction.

Hy-Rib is not a new material but has been used extensively in important buildings for factories, store houses, residences, garages, silos and other structures. Conservative, hard-headed business men, who make their dollars invested in buildings go as far as possible, are using this material.

For many months our expert engineers have been studying the requirements of farm building construction. Details have been worked over carefully and improvements developed at every possible place. The latest and most sanitary methods of housing animals and caring for milk and feed have been studied and incorporated in our plans for buildings. The designs shown in this hand-book we know will be welcomed by all and will be a valuable guide for all building work.

Of course it is impossible to show all possible types of construction and many points will come up on which you will wish further information. For this reason, we want you to write us fully about such building work, so that our engineers can give you complete advice and suggestions. Make use of us as your building advisers. There is no expense whatever to you.

## WHAT HY-RIB IS

Hy-Rib is a steel sheathing with deep, stiffening ribs, all manufactured from a single sheet of steel. Between these ribs the steel is so expanded as to provide a perfect surface and clinch for plaster.

The deep ribs give exceptional stiffness to the sheathing, so that no centering is required where Hy-Rib is used in floors and roofs. These ribs act like the solid steel studs when Hy-Rib is used in walls and partitions. By doing away with centering and studs, Hy-Rib reduces the cost and simplifies concrete construction. Practical builders know that centering is a very expensive item of concrete construction, besides being very difficult to erect. The use of Hy-Rib is simplicity itself; merely set up the sheets of Hy-Rib, apply the cement and the construction is complete.





### WHERE HY-RIB IS USED

Hy-Rib reaches you in perfect, flat sheets or in curved sheets as required, and is handled just like a piece of lumber. All that you have to do is to place it in its proper location and apply the covering of concrete, either in the form of a plaster as in walls, or poured in, as in floors and roofs. The uses for Hy-Rib are therefore unlimited.

In any place where you could use lumber or masonry Hy-Rib will give better and more economical construction. In every structure that you erect on the farm there is a place where you could use Hy-Rib advantageously; in your farm-houses, barns, silos, root cellars, ice-houses, cisterns, vats, septic tanks, etc. You can use it in the outside walls, or the inner partitions, floors, roofs, ceilings, fences, enclosures, etc. If you are in doubt about any particular points, do not hesitate to write us for our suggestions.

### THE TWO TYPES OF HY-RIB

Type of Hy-Rib	Gauge No. (Thickness)	Height of Ribs	Spacing of Ribs	Width of Sheets	Standard Lengths
3-Rib Hy-Rib	28-26-24	$\frac{13}{16}$ "	7"	14"	6'-8'-10'-12'
4-Rib Hy-Rib	28-26-24	$\frac{13}{16}$ "	$3\frac{1}{2}$ "	$10\frac{1}{2}$ "	6'-8'-10'-12'

Intermediate and shorter lengths are cut without charge, but any waste in cutting to required lengths will be charged to the purchaser.

In ordering, no allowance need be made for side laps as they are provided in the Hy-Rib. End laps of two inches should be allowed where splice is made over supports; otherwise, eight inches.

Hy-Rib is shipped in bundles, containing sixteen sheets, regardless of length. We recommend the use of painted Hy-Rib, but can supply it unpainted.



Hy-Rib is manufactured with a full sized rib along each sides of the sheet, making a perfect interlocking splice when two sheets are joined. A similar interlocking splice is provided at the ends by allowing the two sheets to overlap. In this way absolute continuity of strength and reinforcement is provided throughout the the entire floor or wall surface.





## HY-RIB BENT TO CURVE

Our shops are equipped with special rolls to bend 4-Rib Hy-Rib to any desired arc of circle with radius varying from 13 inches to 20 feet. The shop bending insures absolute accuracy and smoothness of curve and avoids the necessity of expensive special field labor.

Curved Hy-Rib possesses all the advantages of straight sheets, but in a more marked degree. Circular centering of any kind is very expensive. Curved Hy-Rib does away entirely with this centering and provides at the same time the reinforcement for the concrete.

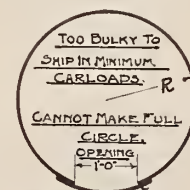
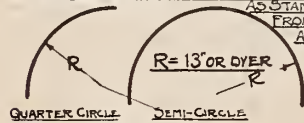
Hy-Rib is supplied at small extra charge with the following types of curve:

1st. **Circular**—any arc with radius between 13 inches and 20 feet, and covering any portion of a circle less than three-quarters of the whole circumference.

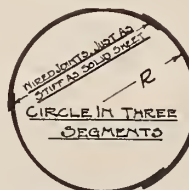
2nd. **Central portion straight and both ends curved to the same arc.**

3rd. **One end of the sheet straight, the other end curved.**

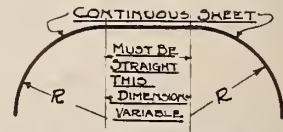
STANDARD SHEETS 6'-0" 8'-0" 10'-0" 12'-0"  
INTERMEDIATE LENGTHS WILL BE CUT FROM LARGER  
STANDARD LENGTHS AND WILL BE CHARGED FOR SAME  
AS STANDARD LENGTH FROM WHICH THEY  
ARE CUT.



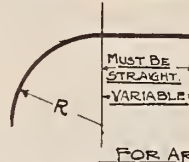
SMALL SEGMENT TO  
CLOSE CIRCLE



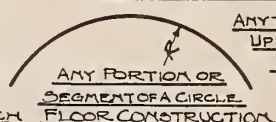
FOR LARGE CIRCULAR  
SEWERS, CHIMNEYS, ETC.



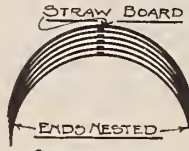
FOR ARCH FLOOR CONSTRUCTION



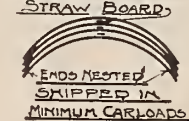
FOR ARCH FLOOR CONSTRUCTION



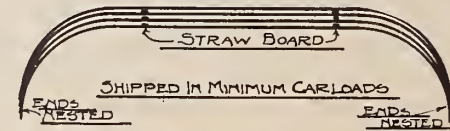
METHODS OF BENDING HY-RIB.  
ANYTHING FROM A RADIUS OF 1'-0"  
UP TO A FLAT SHEET  
CAN BE FURNISHED



SHIPPED IN  
MINIMUM CARLOADS



SHIPPED IN  
MINIMUM CARLOADS



METHODS OF SHIPMENT.

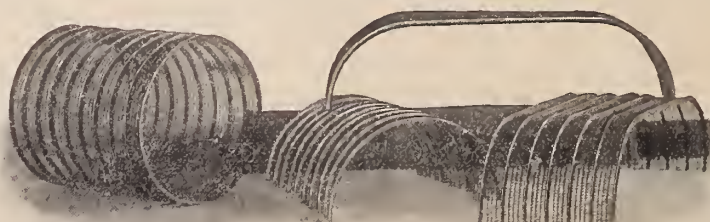


METHOD OF SHIPPING  
FLAT SHEETS



ENDS ARE NESTED.  
ONLY WHEN SHEETS  
ARE BENT TO RADIUS

4-Rib Hy-Rib is supplied by our shops in any of the types of bending here shown. Note method of bundling for shipment.







## STANDARD RIB LATH

Size of Sheets— $20\frac{1}{4} \times 96$  inches  
Shipped in bundles containing 12 sheets,  
or 18 yards.

Grade	Weight per square yard	Maximum stud spacing for walls (center to center)	Maximum joist spacing for ceilings (center to center)
Rib Lath No. 1	2.74 lbs.	14"	12"
Rib Lath No. 2	3.42 lbs.	16"	14"
Rib Lath No. 4	4.10 lbs.	18"	16"

We recommend the use of painted lath, but can supply it without paint if desired.

## BEADED PLATE RIB LATH

Beaded Plate Rib Lath is especially well adapted for heavy work and ceilings.

Size of sheets— $15\frac{1}{4} \times 96$  inches.  
Shipped in bundles containing 16 sheets,  
or 18 yards.

Grade	Weight per square yard	Maximum stud spacing for walls (center to center)	Maximum joist spacing for ceilings (center to center)
Rib Lath No. 1A	3.63 lbs.	18"	16"
Rib Lath No. 2A	4.54 lbs.	20"	18"
Rib Lath No. 4A	5.45 lbs.	24"	22"

We recommend the use of painted lath, but can supply it without paint if desired.

## "B" RIB LATH

"B" Rib Lath is designed the same as Standard Rib Lath, but with somewhat greater expansion.

Size of sheets— $24\frac{5}{16} \times 96$  inches  
Shipped in bundles containing 10 sheets,  
or 18 yards.

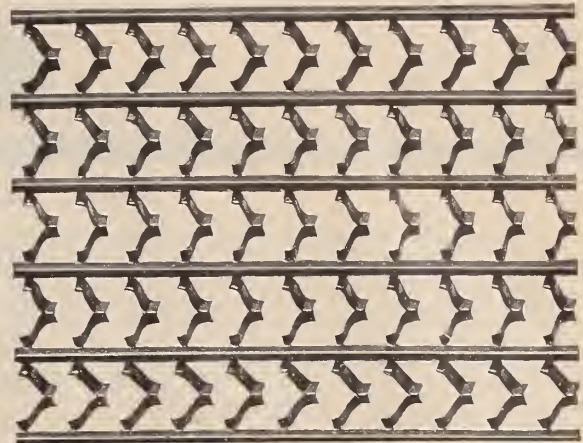
Grade	Weight per square yard	Maximum stud spacing for walls (center to center)
Rib Lath No. 1B	2.28 lbs.	12"
Rib Lath No. 2B	2.85 lbs.	14"
Rib Lath No. 4B	3.42 lbs.	16"

We recommend the use of painted lath, but can supply it without paint if desired.

## RIB STUDS

Rib Studs made of the highest grade of open-hearth steel—are open for the passage of conduits and pipes, and provide an uninterrupted air space between the two plaster surfaces, preventing conduction of heat, moisture and sound.

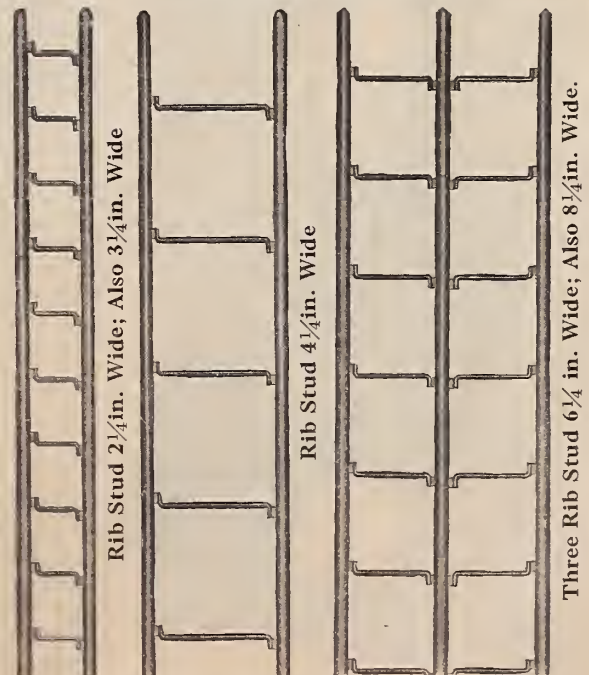
Rib Studs are made in five widths ( $2\frac{1}{4}$  in.,  $3\frac{1}{4}$  in.,  $4\frac{1}{4}$  in.,  $6\frac{1}{4}$  in., and  $8\frac{1}{4}$  in.) and in any length up to 18 feet.



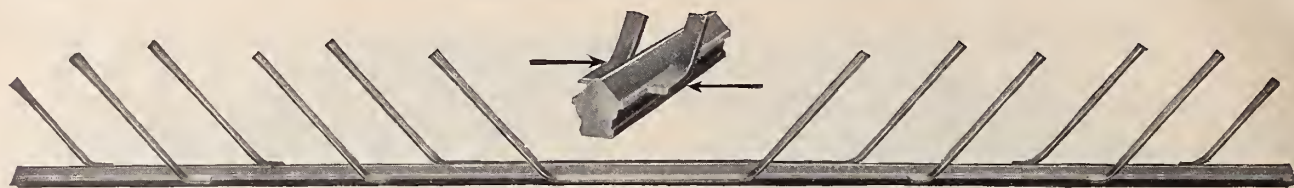
Standard Rib Lath



Beaded Plate Rib Lath







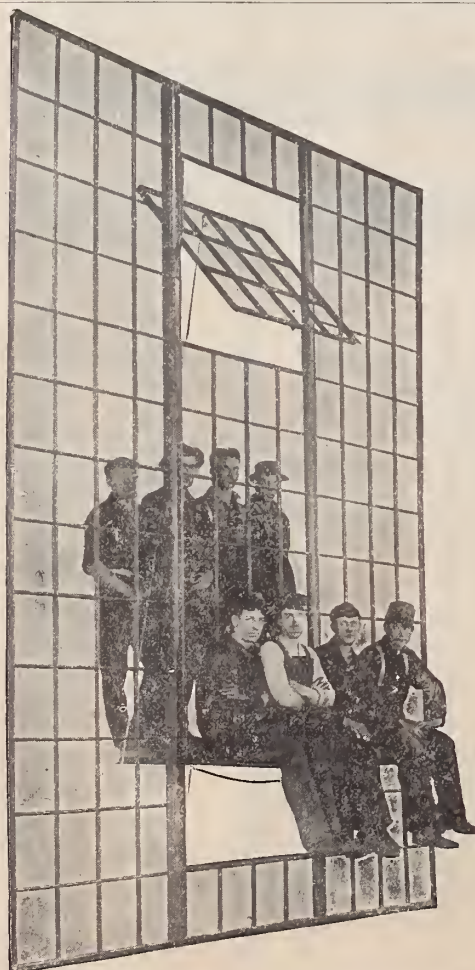
### KAHN TRUSSED BARS

The **Kahn Trussed Bar** for reinforcing concrete Beams and Girders consists of a main horizontal bar and rigidly connected diagonal shear members. The cross section of the bar has two horizontal flanges projecting at opposite sides. These flanges are sheared up at intervals to form the rigidly connected diagonals, making a unit of main bar and shear members.

**Rigid connection of shear members** is the one essential requirement of properly constructed reinforced concrete beams. It is necessary for strength, safety, economy, durability and fireproofness of the finished structure.

Kahn Trussed Bars are manufactured from the highest grade of open-hearth steel and are shipped cut to exact length ordered.

Sizes	Weight per Lineal Foot	Area	Length of Diagonals
$1\frac{1}{2}''$ x $1\frac{1}{2}''$	1.4 lbs.	0.41 sq. in.	6'', 8'', 12''
$\frac{3}{4}''$ x $2\frac{3}{16}''$	2.7 lbs.	0.79 sq. in.	12'', 8'', 18'', 24'', 30''
$1\frac{1}{2}''$ x $2\frac{1}{4}''$	4.8 lbs.	1.41 sq. in.	24'', 30'', 18'', 36''
$1\frac{3}{4}''$ x $2\frac{3}{4}''$	6.8 lbs.	2.00 sq. in.	30'', 18'', 24'', 36''
$2''$ x $3\frac{1}{2}''$	10.2 lbs.	3.00 sq. in.	30'', 24'', 36'', 48''



Remarkable Strength of United Steel Sash.  
Eight Men Balanced on Ventilator.



### RIB BARS

The **Rib Bar** for reinforcing concrete is a special rolled section with a series of cross ribs so designed as to secure maximum grip on the concrete.

The **Rib Bar** is manufactured from the highest grade of open hearth steel of great strength and ductility.

**Rib Bars** are manufactured in the following sizes:

Size	Area	Weight per Foot
$\frac{1}{4}''$	.06 sq. in.	.213 lbs.
$\frac{3}{8}''$	.14 sq. in.	.48 lbs.
$\frac{1}{2}''$	.25 sq. in.	.86 lbs.
$\frac{5}{8}''$	.39 sq. in.	1.35 lbs.
$\frac{3}{4}''$	.56 sq. in.	1.95 lbs.
$\frac{7}{8}''$	.77 sq. in.	2.65 lbs.
$1''$	1.00 sq. in.	3.46 lbs.
$1\frac{1}{8}''$	1.27 sq. in.	4.38 lbs.
$1\frac{1}{4}''$	1.56 sq. in.	5.41 lbs.

## United Steel SASH

**UNITED STEEL SASH** give greatest possible fireproofness, daylighting and permanency to window construction. Made of deep, rolled-steel sections, which have greatest strength and do not obstruct the light. Made absolutely weatherproof around large ventilators by double-contact joints. Improved and simplified method of glazing. Glass, 10 to 14 inches wide, and 16 to 24 inches high. Furnished in units to fit any size of window opening.





## MATERIALS FOR CONCRETE, MORTAR AND PLASTER

### CEMENT—

All cement should meet the standard specifications of the American Society for Testing Materials. It is preferable where possible to have all cement tested by competent authorities. Cement should always be kept in a dry place and never allowed to become wet. Don't keep cement on the bare ground, nor pile it against the outside walls of buildings. On the ground build a supported floor made of wooden blocks covered with boards.

### SAND—

The best kind of sand to use is one that is well graded from coarse to fine. If such a sand is not found naturally, it can be easily made up by mixing a couple of different grades together. The sand grains should be good and hard. Sand should not contain over five percent of dirt, loam or any other foreign substance. The presence of dirt can ordinarily be easily detected by rubbing the sand in the palm of the hand.

### BROKEN STONE AND GRAVEL—

The broken stone should be of a hard, close grain and free from dust and dirt. For the ordinary Hy-Rib construction of floors and roofs, the stone should be of such size as to pass through a half-inch ring. For bridges and culverts the limiting size should be one inch, and for heavy abutments and concrete foundations, etc., one and one-half inch. Gravel should be free from dirt and loam and should be well-graded in size up to the largest sizes indicated above. If it contains sand, a proper reduction in the amount of sand used should be made.

### WATER—

Water for concrete should be clean and free from strong acids and alkalis. It is a good plan to test out all of your materials by mixing up a block of concrete and allowing it to set to make sure that it is hard and sound.

### HYDRATED LIME—

For plaster work use only a good, hydrated lime as prepared by first-class manufacturers. This hydrated lime should be uniform in quality and perfectly hydrated. Never use ordinary lump lime, which is slaked on the job, as it is not as good as the manufactured hydrated lime.

## CONCRETING IN FREEZING WEATHER

Under no circumstances allow concrete to freeze, as, even though it thaws out afterwards, it will not be as satisfactory as concrete which sets in the regular way. It is best to stop all concrete work in freezing weather, unless provisions can be made which would prevent any chance of the concrete being frozen. Heating the materials and covering the concrete after being laid with some good insulating material such as cement bags, straw, etc., are often helpful. Best of all, don't do any concrete work in freezing weather. When the nights are likely to turn cold, be sure that all of the concrete is thoroughly covered up with insulating material as indicated above, to prevent freezing.

## WATERPROOFING

Concrete work which is in any position exposed to water or dampness can be readily made absolutely waterproof by the use of Trus-Con Waterproofing Paste. This material is mixed in the water used for concrete or mortar in the proportions of one part Paste to twelve parts water. This water containing the Waterproofing Paste is then used in place of the ordinary water used in mixing concrete mortar and plaster. It is not necessary to make the entire mass waterproof; only the exposed three-quarters of an inch needs to contain the Waterproofing Paste mixture.

## CONCRETE FINISHES AND DAMP-PROOFING

For concrete floors Trus-Con Floor Enamel gives a hard, tile-like finish which is dampproof, resists wear and prevents any formation of concrete dust. It is readily kept clean by mopping. Trus-Con Floor Enamel fuses into the concrete, becoming a part of it, and does not peel and crack off like ordinary paints.

Similarly, concrete exterior walls can be given an attractive dampproof and wear-resisting finish by the use of Trus-Con Exterior Wall Finishes. These finishes dry with a flat tone and have been especially prepared for finishing concrete surfaces. They are hard, wear-resisting and become part of the concrete.

Trus-Con Interior Wall Finishes are suitable for coating all interior walls and ceilings. They dry with a hard, flat finish which is dampproof and wear-resisting. They can be readily kept clean by mopping. Where Trus-Con Finishes and Floor Enamel are used, the interiors and exteriors of concrete buildings can be readily kept clean by washing and the concrete work is made proof against staining and spotting.



## DETAILED INSTRUCTIONS ON BUILDING HY-RIB CONSTRUCTIONS

In general, all types of building constructions can be subdivided into various parts such as outside walls and sidings; partitions (interior); roofs; floors, and ceilings. As the design for each would be the same in all buildings we shall first give complete instructions on building the various parts before going into the particular applications of Hy-Rib to farm buildings and other structures.

### HOW TO BUILD OUTSIDE WALLS AND SIDINGS

Hy-Rib, plastered with cement, is a simple and economical construction for walls and sidings. Such a wall costs only half the price of brick and besides gives a monolithic and better construction. It is much more economical than wood sheathing, because it is fireproof; saves insurance; does away with the expense of painting and repairs; does not decay and is long-lived.

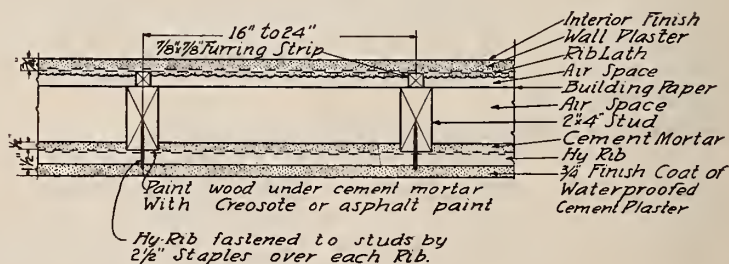
In building outside walls with Hy-Rib a frame work of wood studs or steel members is first erected. These studs are built up similarly to the ordinary wood-frame construction. As will be seen on the details shown in this book, the wood studs are ordinarily placed about two feet apart. Place all temporary bracing on the inside. Paint over the outside face, and for an inch back along the sides of the studs with creosote or asphalt paint to prevent absorption of water from the cement mortar.

Then fasten the Hy-Rib sheathing to these studs with the ribs running horizontally and the lath side inwards.

Interlock all Hy-Rib sheets at sides and ends and wire or clamp sheets together every 24 inches along the sides and at every rib at the ends. Fasten the Hy-Rib to the studs with staples or long nails at every rib.

After the Hy-Rib sheets are all in place, apply a cement plaster mixed as follows: Portland Cement, 5 parts; Sand, 12 parts; Lime paste, 1 part. Portland Cement should be a good, standard brand and meet the requirements of the Specifications of the American Society for Testing Materials. The sand should be clean and free from loam and well-graded in size. Hydrated lime should be uniform in quality and perfectly hydrated.

The cement and hydrated lime after being thoroughly mixed dry to a uniform color are added to the dry sand and the whole manipulated until evenly mixed.



Typical Hy-Rib Siding During Construction.  
Note United Steel Sashes Above.



Hy-Rib Walls, Agricultural and Horticultural Building,  
State Fair Grounds, Raleigh, N. C.  
Frank K. Thompson, Architect and Engineer.





Add water to secure proper working consistency. This mortar should be thoroughly worked over until perfectly homogeneous. Only mix up as much of this composition as can be immediately applied and never use any mixture that has been standing over thirty minutes.

Apply a first coat of this plaster to the wall with the addition of long cow-hair for key. While this coat is still wet scratch over the surface to form a key for the finish coat, which is applied after the coat is set sufficiently hard to hold it. The plaster for this finish coat is the same as for the scratch coat, except that the finish coat should be waterproofed in the following way: Instead of using plain water for mixing the concrete use a mixture of 1 part of Trus-Con Waterproofing paste and 12 parts of water. The thickness of this waterproofing coat should be at least  $\frac{3}{4}$  inch. The finish coat is floated over free from porous imperfections and of course can be given any desired special finish.

Next plaster the inner side of the lath with a mixture used for the scratch coat to a thickness of one-half inch. In this way a solid, monolithic wall is obtained, two inches in thickness.

The wall should be protected against too rapid drying and the direct rays of the sun by means of damp canvas or sprinkling. The finished work should be kept moist in this way for at least two days after plastering.

In farm houses and many other buildings where an air space is desired, these walls are built in the following way: After building the outside siding as described above, fasten Rib Lath on the inner face of the studs and plaster.

The plaster coat is made of either cement or lime plaster, as desired, and is applied directly to this Rib Lath the same as where ordinary lath is used.

Builders will occasionally have constructions especially where steel supports are used, in which the vertical stud spacing is much greater than outlined above. The table given below shows the requirements for wall constructions of this kind, giving thickness and the reinforcement necessary.

#### SIDE WALLS REINFORCED WITH HY-RIB

(Minimum Requirements.)

(Ribs of Hy-Rib running horizontally.)

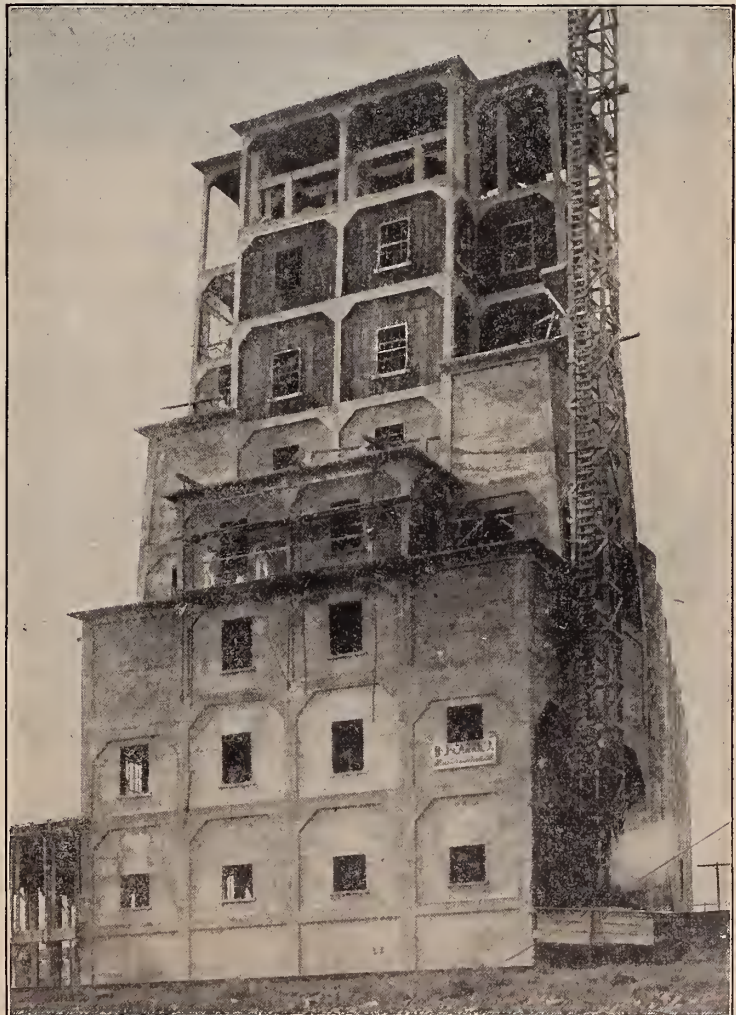
Spacing of Supports	Thickness of Wall	REINFORCEMENT
3'	1 $\frac{3}{4}$ "	No. 28, 3-rib Hy-Rib.
6'	1 $\frac{3}{4}$ "	No. 26, 3-rib Hy-Rib, or No. 28, 4-rib Hy-Rib.
8'	2"	No. 24, 3-rib Hy-Rib, or No. 26, 4-rib Hy-Rib.
10'	2"	No. 26, 4-rib Hy-Rib.
12'	2 $\frac{1}{2}$ "	No. 24, 4-rib Hy-Rib.

Temporary braces should be used vertically where structural supports are 6 $\frac{1}{2}$  feet apart or over.

This temporary bracing is only required until cement plaster has had time to set properly.



Shop for Lars Backe, Thief River Falls, Minn.



Hy-Rib Sidings, Smith Bros. Grain & Elevator Co.,  
Ft. Worth, Tex.





Hy-Rib Roof for Soft Foundry Building, American Car & Foundry Co., Berwick, Pa.

## HOW TO BUILD HY-RIB ROOFS

One of the most extensive uses for Hy-Rib has been in roof construction. Here the Hy-Rib, covered with concrete, takes the place of the ordinary wood sheathing. Such roofs are thin and light, saving money in the frame work supporting them. No centering whatever is required with Hy-Rib.

Concrete roofs with Hy-Rib will be found particularly advantageous, as they prevent the chance of fire starting from chimney sparks, from other fires, or from forest fires.

The sheets are merely laid over the supports, concrete poured in to the required thickness on the upper side, and the under side plastered.

The wood joists or steel members supporting the Hy-Rib are placed from two to five feet apart. The thickness of the concrete required as well as the gauges of the Hy-Rib for various spans and loadings are given in the tables, page 11. Ordinarily roof loads are light, not exceeding forty pounds per square foot. Particular attention is called to the lower table which gives the limiting spans for Hy-Rib steel sheathing to support various thicknesses of concrete. When it is found necessary to use larger spans a temporary wood shoring will be required until the concrete has set, after which the temporary support is removed.

In building Hy-Rib roofs or floors, place all Hy-Rib with the lath side downwards, interlock the adjoining sheets at sides and thoroughly fasten them together every twenty-four inches along the sides and at every rib at the ends by wiring or by clinching of the lapped ribs with special pincers. Where end splices occur between the supports, splices in adjacent rows should be at least two feet apart. Allow a lap of two inches where splices occur over supports; otherwise, eight inches. Rigidly attach the Hy-Rib to the wood supports by means of nails and staples. These attachments should be located at the interlocking side splices between sheets, at least every thirty-one and one-half inches along the supports where slope of floor or roof is less than ten degrees; otherwise, every twenty-one inches. No loads should be placed on the Hy-Rib before concreting; nor until concrete has thoroughly set. Arrange planks for the trucking so as to come over the supports.

The concrete which is placed directly on top of the Hy-Rib is made up as follows: Portland Cement, one part; Sand, two parts; Broken Stone, four parts. Use good Portland cement, meeting the requirements of the Specifications of the American Society for Testing Materials. Sand should be free from loam and dirt and well graded. Use either a broken stone or a gravel which is good, clean, hard and dense, and of such size as will pass through a half-inch ring. Thoroughly mix together the sand and cement dry; next add the broken stone or gravel and water, and mix until absolutely uniform throughout.

This medium wet mixture is applied to the Hy-Rib to the required thickness and floated smooth. A slight spray of water may come through the Hy-Rib mesh when concrete is being poured, but there is no objection whatever to this.

When the concrete is set sufficiently, plaster the under side to a thickness of three-eighths to one-half inch, with the following mixture: Portland Cement, five parts; Sand, 12 parts; Lime Paste, one part. The cement and hydrated lime after being thoroughly mixed dry to a uniform color are added to the dry sand and the whole manipulated until evenly mixed. Add water to secure proper working consistency and sufficient long cow-hair for key. This plaster should be applied immediately and never allowed to stand more than thirty minutes after mixing.





The concrete should be protected from too rapid drying in the direct rays of the sun by using damp burlap or canvas or by sprinkling. Keep the concrete slab moist in this way for at least two days after placing. Composition and tar and gravel roofings are applied directly to the concrete without any special attachments. For slate and tile roofs nailing strips should be provided.

## HOW TO BUILD HY-RIB FLOORS

Hy-Rib possesses the same advantages in floor construction that it does in roofs, doing away entirely with the expense of centering for concrete floor construction. Concrete floors are built exactly the same way and of the same materials as roof construction, except that the loads are usually heavier, requiring increased thickness of concrete and heavier grade of Hy-Rib. The tables below show how much concrete and what type of Hy-Rib should be used for the various loads and spans.

Concrete floors in the form of an arch are very simple to build and of course have exceptional strength and rigidity. The Hy-Rib is supplied by our shops bent to exact curve so that it is used as simply as the ordinary straight sheets. Curved centering such as would ordinarily be required is of course exceptionally expensive so that the saving by using Hy-Rib can be readily appreciated. The methods of placing Hy-Rib for floors, as well as applying the concrete and plaster are exactly the same as those given under the building of roofs, which see.



Arched Hy-Rib Floor in Joseph Bendt Store, Kenosha, Wis., used in conjunction with Reinforced Concrete Beams.

### SAFE LOADS IN POUNDS PER SQUARE FOOT FOR SLABS REINFORCED WITH 4-RIB HY-RIB

(See also table below)

(Safe loads include weight of slab.)

### EXPLANATION OF 4-RIB HY-RIB TABLES

Upper table gives safe loads carried by slab after the concrete has thoroughly set. Safe loads include weight of slab. In floors and roofs weight of the slab must be deducted from the loads given to determine the safe live load. Lower table is used to determine the load 4-Rib Hy-Rib will carry as centering before the concrete has set.

Example: Given a 6 ft. span to carry a safe live load of 40 lbs. per sq. ft. Opposite 2-inch slab reinforced with No. 26 4-Rib Hy-Rib read 74 lbs. load. Deduct from this load 30 lbs. (weight of 2-inch slab +  $\frac{1}{2}$  in. cement plaster underneath), giving safe live load of 44 lbs.

Lower table shows that No. 26 4-Rib Hy-Rib as centering will not support the weight of 3 inches of wet concrete on 6 ft. span, but will carry it on a span as great as 3'0". Therefore use one temporary line of shoring down the center of the span. This shoring is removed after concrete has set.

Thickness indicated is depth above base of sheathing	Gauge No. U. S. Standard	Moment of resistance per foot of width	SPAN IN FEET							
			3	4	5	6	7	8	9	10
1" thick slab Wt.=12 lbs. per sq. ft.	28 26 24	965 1155 1540	88 105 140	50 60 80	33 39 52					
1½" thick slab Wt.=18 lbs. per sq. ft.	28 26 24	1838 2205 2940	170 204 272	95 114 152	61 74 98	43 51 68				
2" thick slab Wt.=24 lbs. per sq. ft.	28 26 24	2675 3210 4280	246 295 394	139 167 222	89 107 142	62 74 98	45 54 72			
2½" thick slab Wt.=30 lbs. per sq. ft.	28 26 24	4125 4950 6600	380 456 608	214 257 342	136 164 218	95 114 152	70 84 112	54 65 86		
3" thick slab Wt.=36 lbs. per sq. ft.	28 26 24	6150 7380 9840	569 683 910	320 384 512	204 245 326	142 171 228	104 125 166	80 96 128	63 75 100	60 72 80
3½" thick slab Wt.=42 lbs. per sq. ft.	28 26 24	7275 8730 11640	675 810 1080	380 456 608	241 290 386	169 203 270	124 149 198	95 114 152	75 90 120	60 72 96

### MAXIMUM SPANS FOR 4-RIB HY-RIB AS CENTERING

To support various thicknesses of wet concrete. For greater spans use temporary supports.

Gauge of 4-Rib Hy-Rib	THICKNESS OF SLAB						
	1"	1½"	2"	2½"	3"	3½"	4"
No. 24	5' 0"	4' 0"	3' 6"	3' 2"	2' 10"	2' 8"	2' 6"
No. 26	4' 3"	3' 6"	3' 0"	2' 9"	2' 6"	2' 4"	2' 2"
No. 28	3' 11"	3' 2"	2' 9"	2' 6"	2' 3"	2' 1"	1' 11"



## HOW TO BUILD HY-RIB INTERIOR PARTITIONS

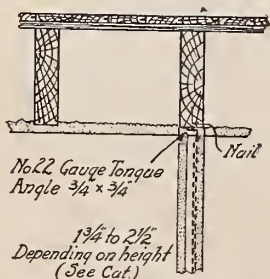
Partitions may be of two kinds: first, bearing walls which support the floors and the construction above; secondly, non-bearing walls, serving merely as dividing walls and not supporting any weights.

The construction for the first type of partition is similar to outside walls and is made up of vertical wood studs, covered on both sides with Rib Lath or Hy-Rib. Apply the cement and lime plaster as required.

By far the greater use of Hy-Rib is in partitions used merely as dividing walls. Here the sheets of Hy-Rib are merely set up vertically, attached at the ceiling and floor, and plastered on both sides. No studs or centering of any kind whatever are required. Hy-Rib does away entirely with the expense and labor of attaching sheets of lath to studs. Hy-Rib partitions are inexpensive to build and have exceptional strength and rigidity as well as being easily and quickly erected.

In using Hy-Rib in partitions, interlock the adjoining sheets at the sides. Securely fasten the sheets together every twenty-four inches along the sides and at the ends by wiring or by clinching of the lapped ribs by pinchers. Where splices occur between supports, allow a lap of eight inches.

Hy-Rib should be attached to floors and ceilings by means of small angles or channels, wooden strips or by setting into grooves. Temporary lines of bracing should be used with Hy-Rib as indicated in illustrations. These lines of support should occur every five feet in height and are removed as soon as the concrete has set. Any type of plaster may be used for the partitions, cement mortar, lime, or patent plaster. Thicknesses and gauges of Hy-Rib to be used for various heights of partitions are given in the following table.

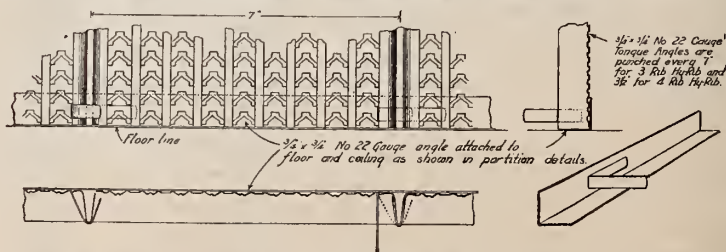


Sketch showing method of erecting Hy-Rib for solid plaster partitions in connection with wooden floors.  
(Use method shown elsewhere for fastening partition to wooden floor.)

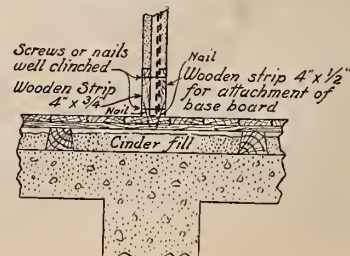
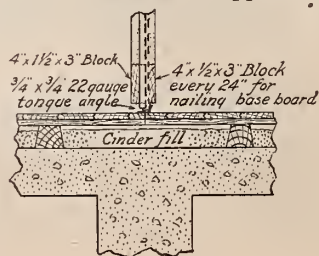
Methods of Attaching Hy-Rib Partitions at Ceiling and Floor.



Hy-Rib Partition, Trussed Concrete Building, Detroit, Mich.  
Note Grounds for Base-Board and Chair-Rail.



Application of 22 Gauge Tongue Angle at Bottom of Partitions and Walls  
Details for Application at Top and Sides are Similar.





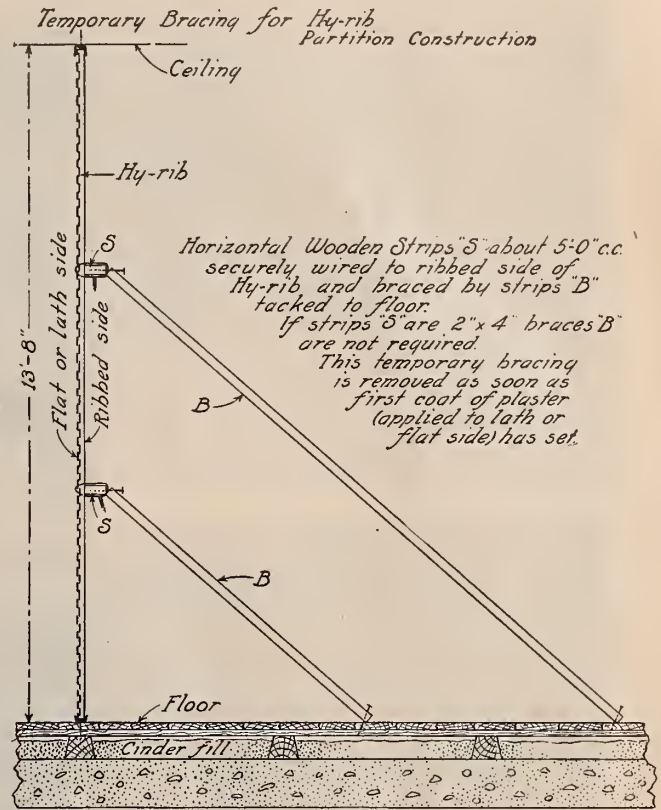


**PARTITIONS REINFORCED WITH HY-RIB**  
(Minimum Requirements.)  
(Ribs of Hy-Rib running vertically.)

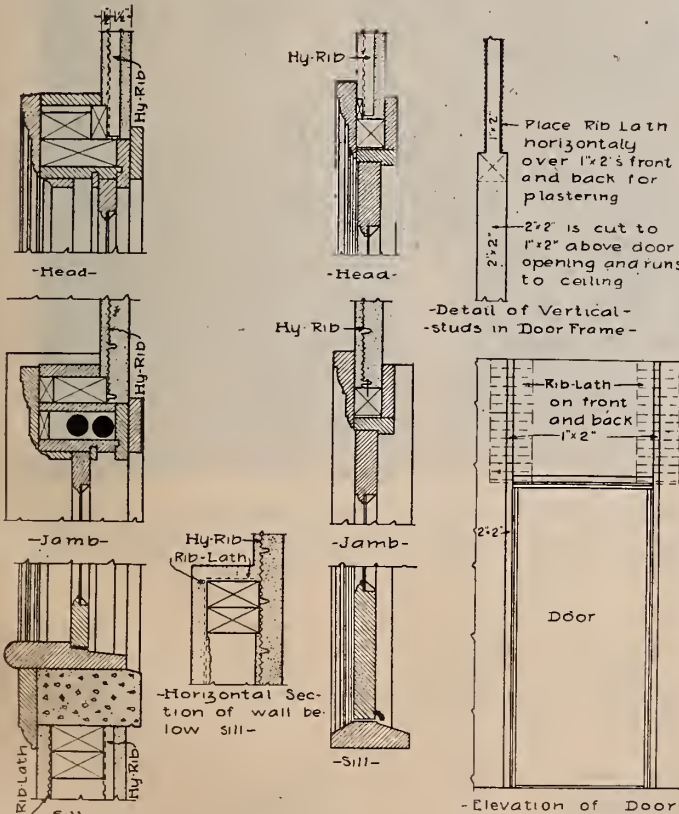
Height of Ceilings	Thickness of Partitions	REINFORCEMENT
10'	1¾"	No. 28, 3-rib Hy-Rib.
12'	2"	No. 26, 3-rib Hy-Rib, or No. 28, 4-rib Hy-Rib.
14	2¼"	No. 24, 3-rib Hy-Rib. or No. 26, 4-rib Hy-Rib.
15'	2½"	No. 26, 4-rib Hy-Rib.
17'	2¾"	No. 24, 4-rib Hy-Rib.

Temporary bracing should be used horizontally every 5 feet.

Above 17 ft., structural supports should be erected vertically in accordance with Side Wall Table, page 9, and the Hy-Rib run horizontally. It may be necessary also in special cases for partitions above 12 ft., which will be subjected to constant vibration, such as in factories, to be constructed in the same manner.

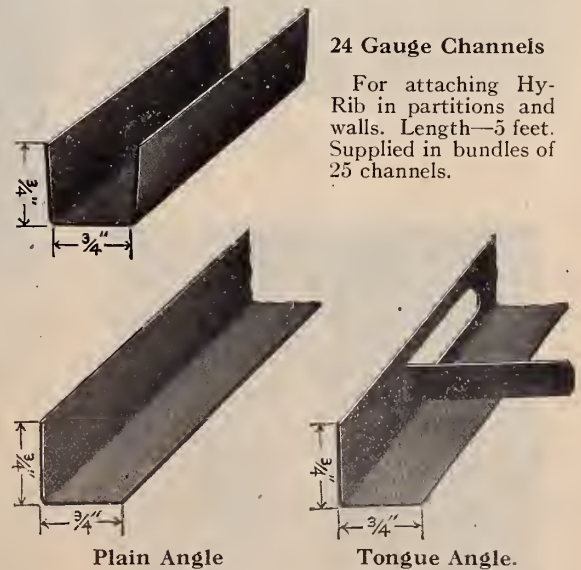


**Temporary Bracing for Hy-Rib Partition Construction.** This Bracing is Removed After the First Coat of Plaster, Applied to Flat Side, Has Set. No Other Bracing is Required.



-DETAILS OF WINDOW -  
-FRAMING -  
-FRAMING DETAILS OF 2<sup>ND</sup> HY-RIB WALLS & PARTITIONS. -

-DETAILS OF DOOR -  
-FRAMING -

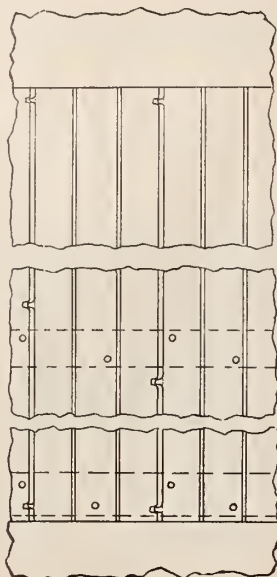


Plain Angle

Tongue Angle.

**22 Gauge Angles**

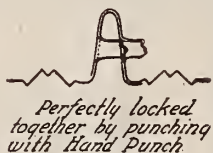
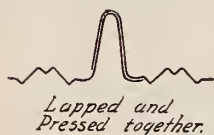
For attaching Hy-Rib in partitions and walls. Supplied in bundles of 25 angles. Length, 5 feet. Spacings of tongues in Tongue Angles are: 3½ in., 7 in., 10½ in. or 14 in.



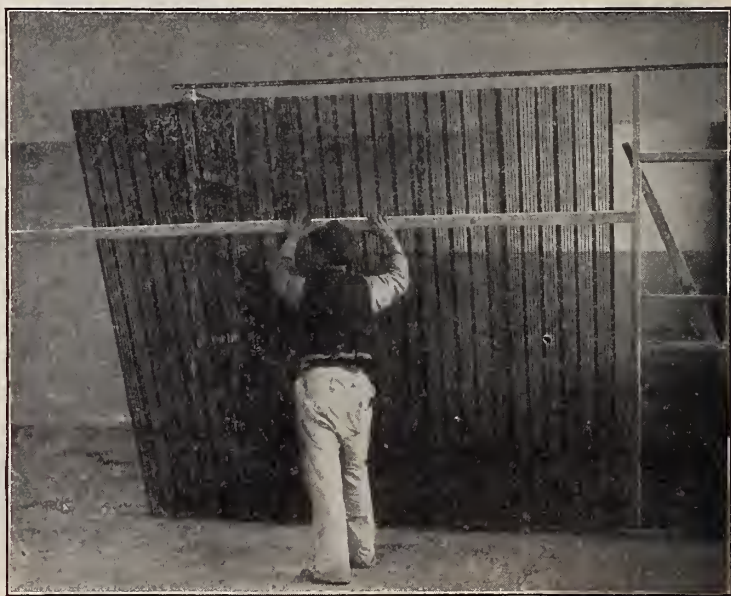
*Sheets securely  
fastened together  
by punching  
lapped ribs.  
This does away  
with all wiring  
(See Detail)*



Uniting Hy-Ribs Sheet by Punching Interlocking Ribs.



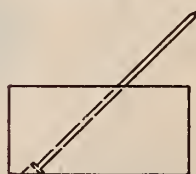
Method of Interlocking and Punching  
Hy-Rib Sheets. (See page 87 for Hy-  
Rib Punch.)



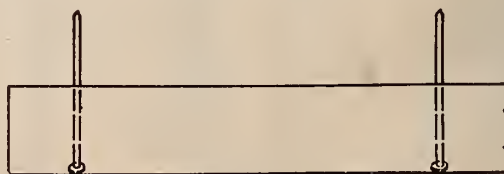
Raising Hy-Rib en masse with 2x4 Wooden Scantling in Which Spikes are Driven as Shown Below. The Ten Sheets of Hy-Rib Have Been Previously United by Punching the Interlocked Side Ribs.



Plastering Hy-Rib Partition



End View.



Side View.

2x4 Scantling with Spikes Driven in Slantwise. These Spikes Engage the Hy-Rib mesh Permitting a Great Area of Hy-Rib to be Raised or Hoisted at one Operation, as Illustrated Above.





## HOW TO BUILD HY-RIB CEILINGS

Ceilings built with either Hy-Rib or Rib Lath have many advantages over wood lath as they do not streak up or show signs of cracking. Hy-Rib is used where spacing of joists is two feet or greater while Rib Lath is used on the smaller spacing. The improved form of lath provides a perfect key for the plaster and prevents any chance of its dropping. Where Hy-Rib is used no stiffening channels or flats are necessary, such as are required with the ordinary metal lath.

In using Hy-Rib in ceilings the sheets have interlocking sides and ends and are securely fastened together every twenty-four inches along the sides. Where end splices occur between supports, the splices on adjacent rows are spaced at least two feet apart. A lap of two inches is allowed where splices occur over supports, otherwise eight inches. In all cases, the Hy-Rib or Rib Lath is rigidly attached to the joists above by means of nails or staples, and Hy-Rib should be attached at each rib along the support.

Sheets of Rib Lath should be lapped and wired together every twenty-four inches along the sides. End laps should always be rib along made over supports.

### STANDARD RIB LATH

Grade	Weight per square yard	Maximum joist spacing for ceilings (center to center)
No. 1	2.74 lbs.	12"
No. 2	3.42 lbs.	14"
No. 4	4.10 lbs.	16"

### BEADED PLATE RIB LATH

Grade	Weight per square yard	Maximum joist spacing for ceiling (center to center)
No. 1A	3.63 lbs.	16"
No. 2A	4.54 lbs.	18"
No. 4A	5.45 lbs.	22"

### 3-RIB AND 4-RIB HY-RIB

For spans, 2'-0" to 2'-11" use No. 28, 3-rib Hy-Rib.  
For spans, 3'-0" to 3'-11" use No. 26, 3-rib Hy-Rib, or No. 28, 4-rib Hy-Rib.  
For spans, 4'-0" to 4'-11" use No. 24, 3-rib Hy-Rib, or No. 26, 4-rib Hy-Rib.  
Each high rib of Hy-Rib shall be attached at each support.



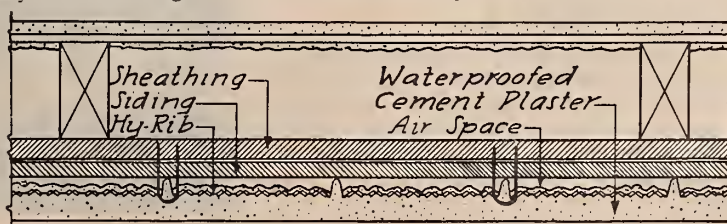
Hy-Rib Ceilings, Mount St. Joseph Academy, Buffalo, N. Y.,  
A. A. Post, Architect.

## How to Change an Ordinary Wood Frame House into a Modern Stucco Building

An old wood-frame building can be readily transformed at nominal expense into a fine stucco-finished building by the use of Hy-Rib. This Hy-Rib is placed against the wood clapboards, the lath surface outward. The cement stucco plaster is applied directly to it. Hy-Rib sheets should be interlocked at sides and ends and securely stapled or nailed to the wood sheathing at least every twenty-four inches in both directions. The plaster used should be the same as that indicated for building walls and sidings and the outer three-quarter inch finish waterproofed with Trus-Con Waterproofing Paste.

It is customary to remove all ornamental and fancy wood trimmings from the house as the beauty of the stucco lies in its plainness of line. Around eaves and other portions which are more or less cut up, our Rib Lath can be readily fitted and the stucco applied.

The transformation made in a house in this way is very wonderful, and farmers will find it advantageous not only to stucco their farmhouses but also many of their other buildings. The concrete of course gives a very good protection against fires besides greatly increasing the life and value of the property.



HY-RIB SHEATHING FORMING A SELF FURRING  
LATH ON WOOD SIDING





## CONCRETE FARM HOUSES

Concrete is the proper construction for the farmhouse. Sand and gravel, the principal materials that are used, are found right on the farm property. Where Hy-Rib is used all of the work can be done by a good farm mechanic. The cost is remarkably low, comparing very favorably with the ordinary wood frame construction. Of course the big saving in insurance, absence of repairs, and increased life, etc., make this easily the cheapest possible construction.

The outside walls of the farmhouse are built with vertical studs and Hy-Rib sheathing described on page 8. The roof is built with Hy-Rib covered with concrete so as to make a complete fireproof enclosure for the house. In the interior, Hy-Rib may be used over the floor joists to make a complete concrete floor. The ceilings above are made with Rib Lath as previously described, and plastered. Partitions on the interior are built with Hy-Rib set vertically.

All of the interior may be given a good, hard plaster or cement finish and if the floors and walls are finished with Trus-Con Floor Enamel, and Wall Finishes, they can be readily kept clean by mopping. This gives a modern, sanitary building. The outside porch and verandas should surely be built of reinforced concrete, as they are subjected to severe weather and wear. We show two plans for small houses and show in general the applications of Hy-Rib and Rib Lath.

The larger residences or in fact any type of design can be constructed in a similar manner. The general scheme of construction, aside from the use of concrete and the Hy-Rib, is similar to the methods of building with which the farmer has long been familiar. The foundations for walls, etc., are of course preferably made of solid concrete construction.

Builders perhaps may have other plans of houses which they would like to build. We would be very glad to adapt the Hy-Rib construction to any such designs where this material is used and to prepare the necessary details to take care of the proper construction of such work.



Hy-Rib Residence of W. Rosberry, Roslindale, Mass.

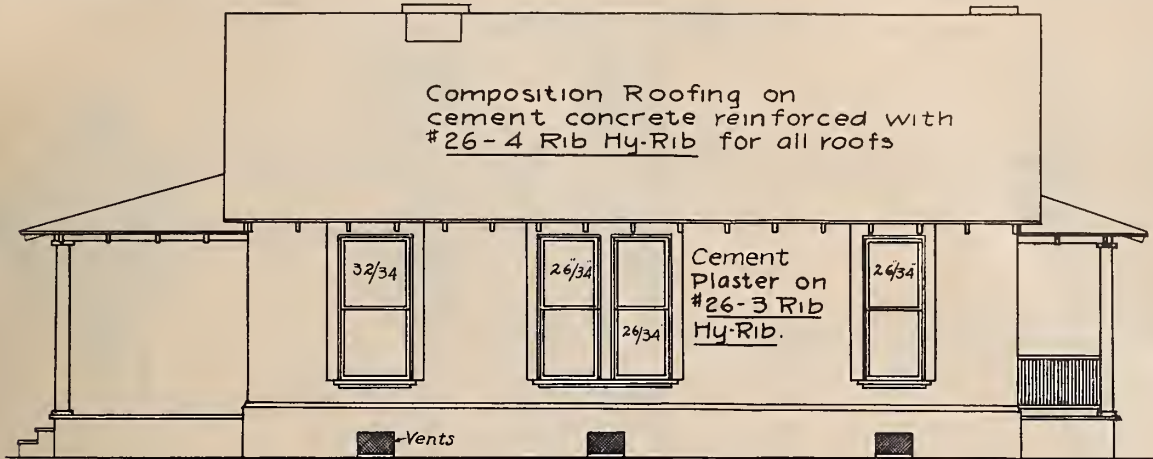


Residence of Miss Alice Henck, Santa Barbara, Cal.  
Thomas Nixon, Architect.

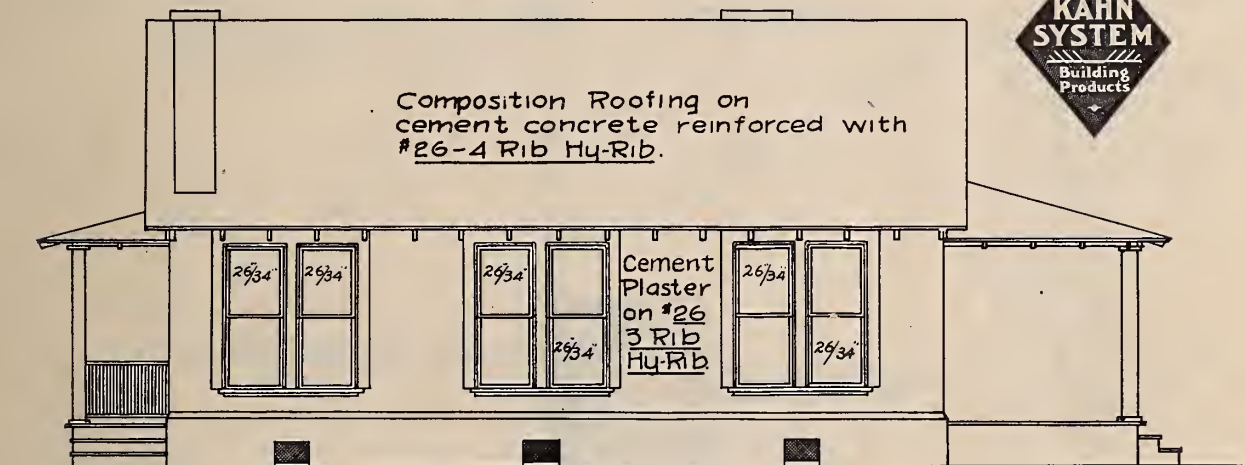


Workingmen's Cottages of Hy-Rib, Tampa, Florida.





—SIDE ELEVATION—



—SIDE ELEVATION—

## CONCRETE FARM HOUSE

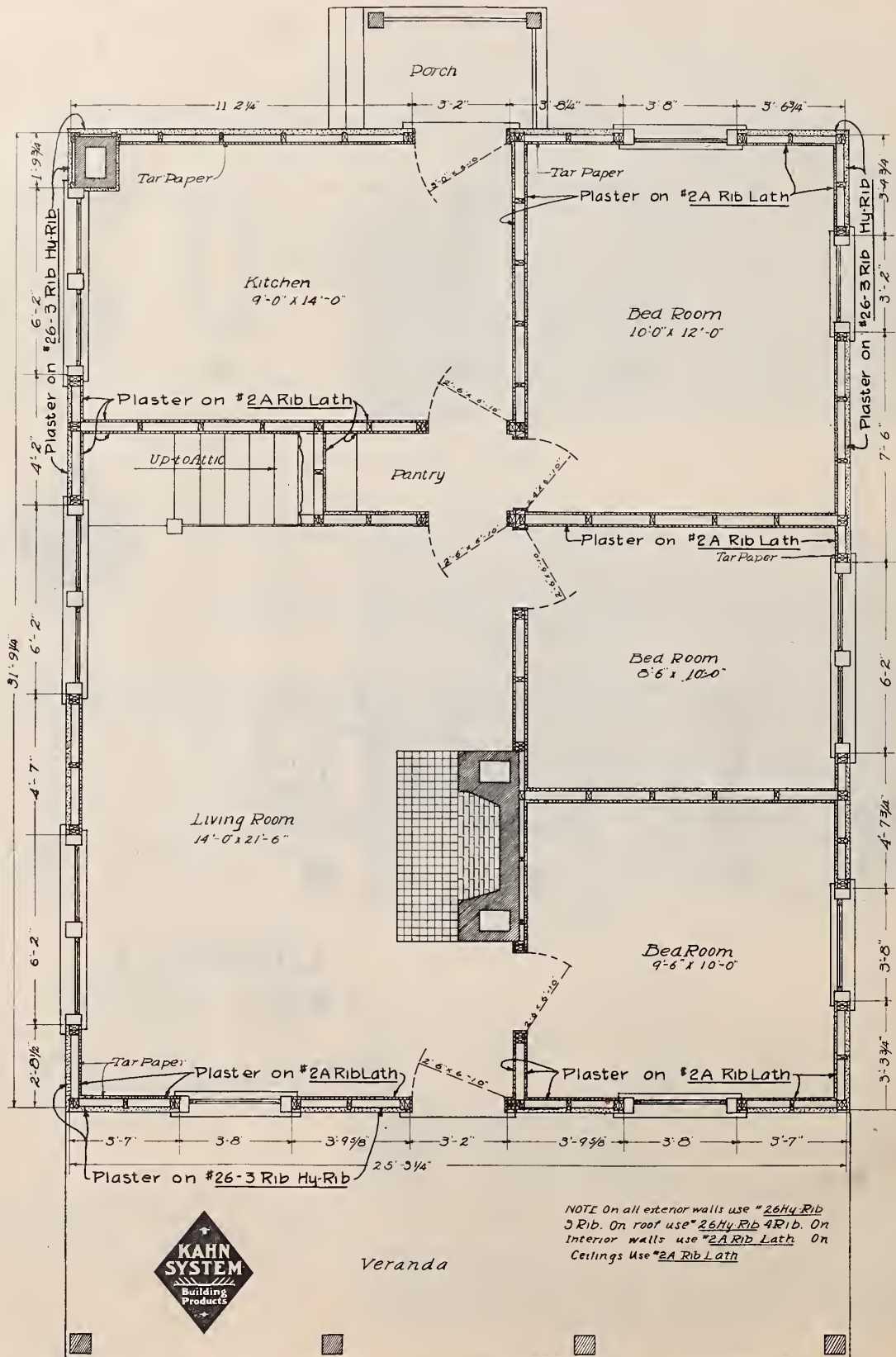
REINFORCED WITH  
**HY-RIB & RIB LATH**  
ON WOOD FRAME



—FRONT ELEVATION—

Hy-Rib Cement Construction is  
Fire-Vermin-Moisture-Rust- and  
Rot-Proof and should be used  
for all Farm Houses.

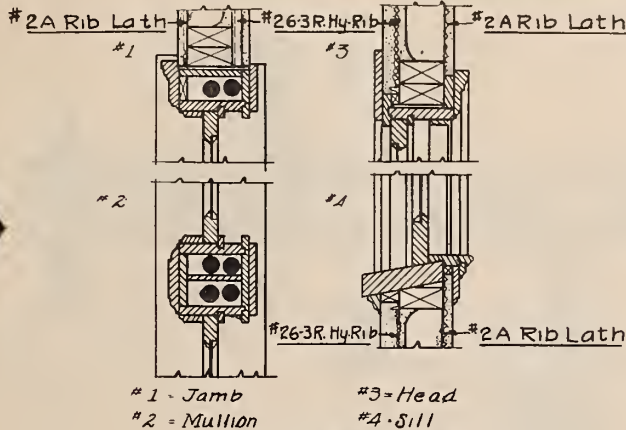
Concrete Farm House—Design No. 1.



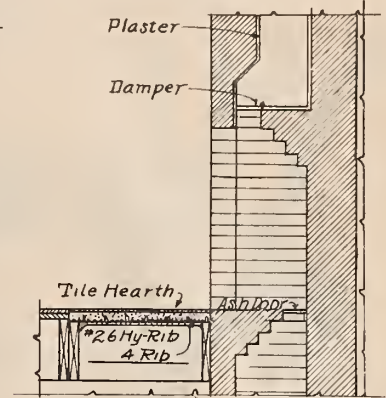
Concrete Farm House  
Design No. 1.

FLOOR PLAN

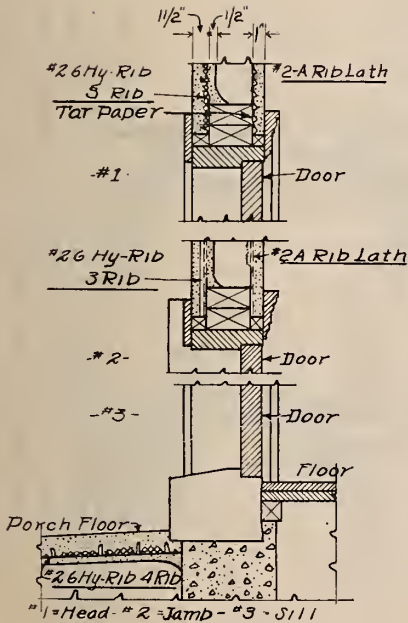




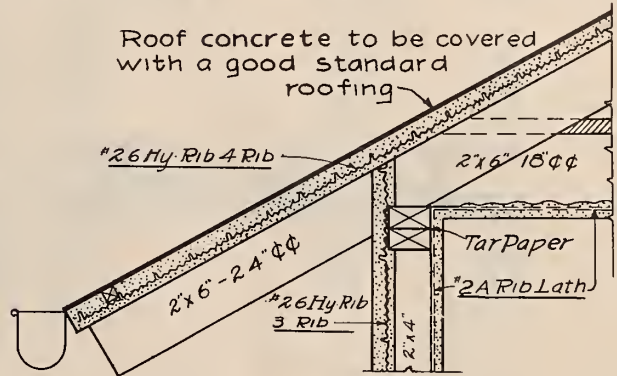
SECTIONS THRU WINDOW



SECTION THRU FIREPLACE

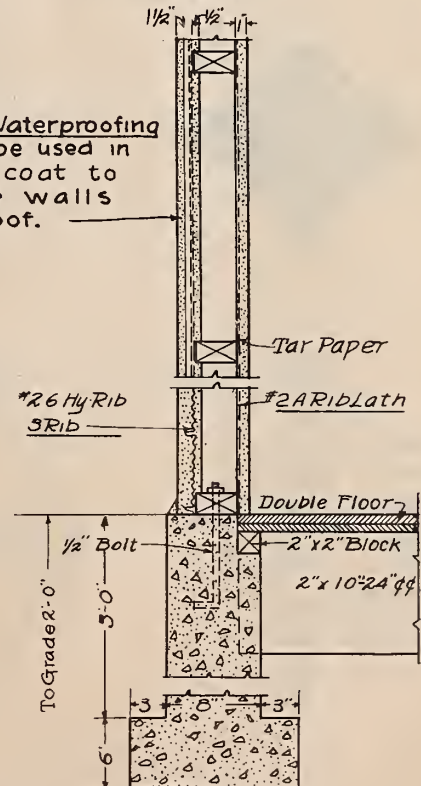


SECTIONS THRU DOOR

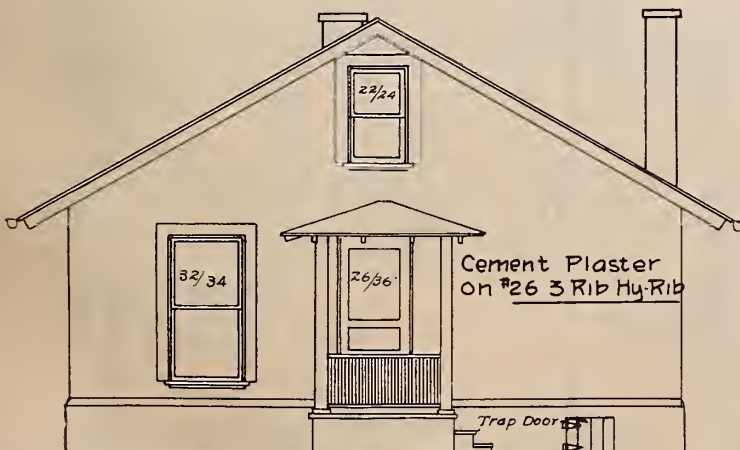


Roof concrete to be covered  
with a good standard  
roofing

Trus-Con Waterproofing  
Paste shall be used in  
the last coat to  
make the walls  
waterproof.

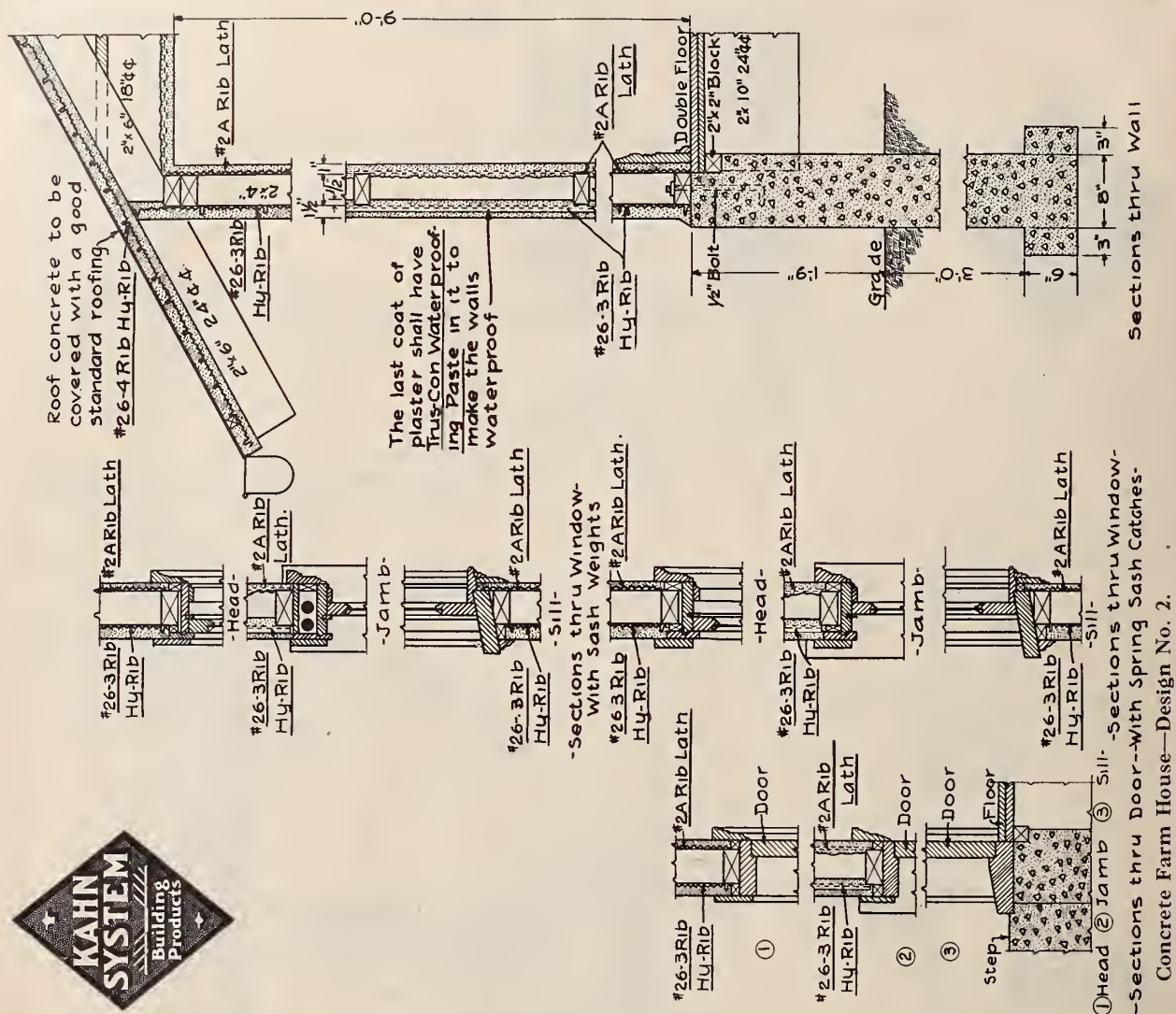
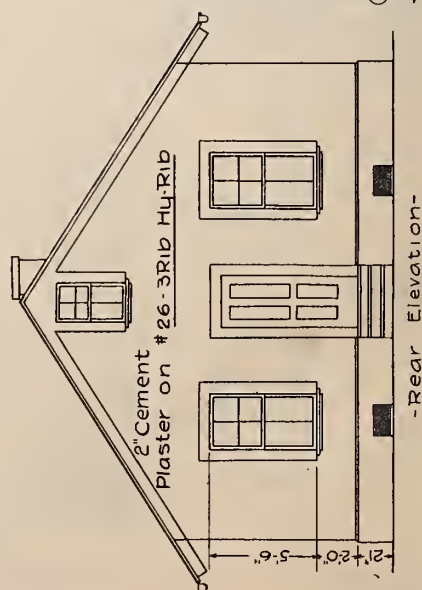
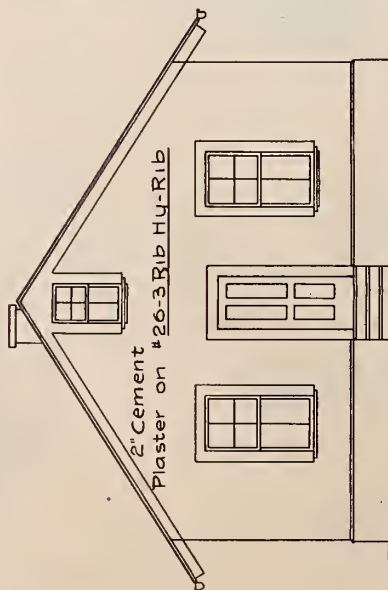


SECTIONS - THRU-WALL -

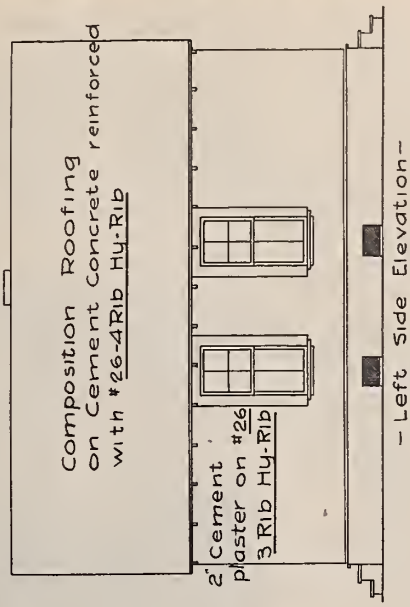
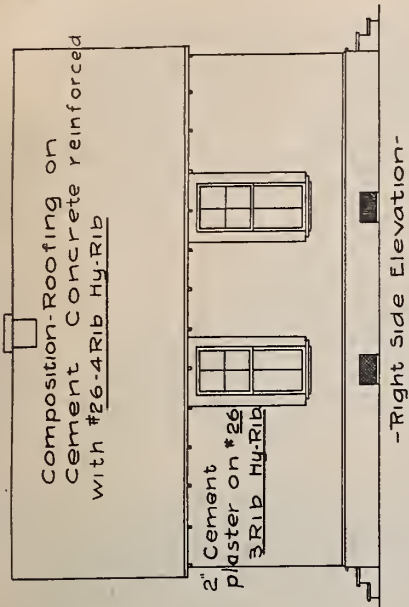


Concrete Farm House—*REAR ELEVATION*—  
Design No. 1.

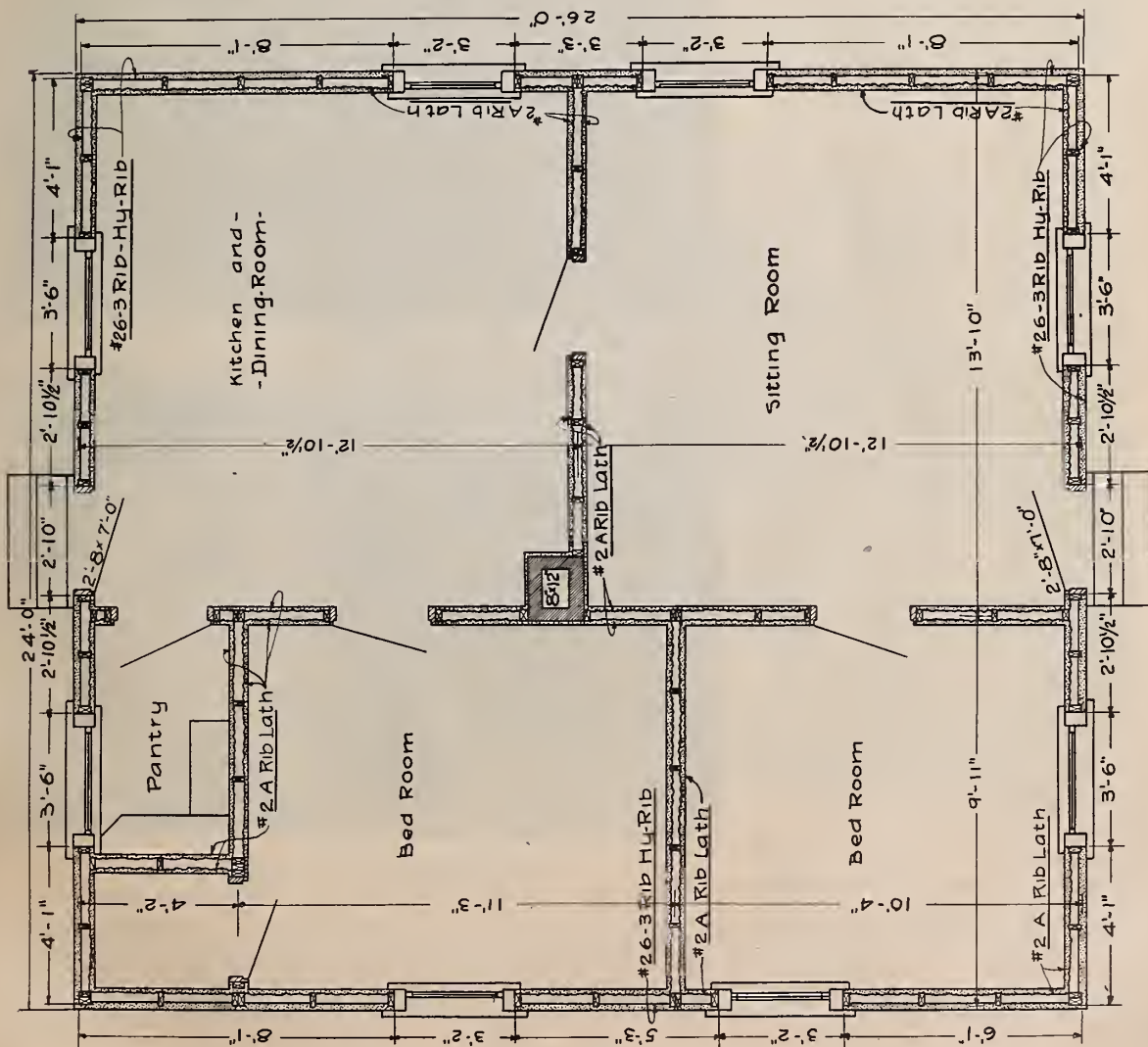
**CONCRETE  
FARM HOUSE  
REINFORCED WITH  
HY-RIB & RIB LATH  
ON WOOD FRAME  
NO FORMS REQUIRED**







Hy-Rib Cement Construction is  
Fire-Vermin-Moisture-Rust-and  
Rot-proof, and should be used  
for all Farm Houses.



-Plan-

Concrete Farm House—Design No. 2.



## HY-RIB CONCRETE GARAGES

An automobile is a valuable possession and should be protected from the attacks of the elements by housing it in a building that is permanent and fireproof.

Ordinary methods for such construction have not been widely used, owing to their great expense. By the use of Hy-Rib, this cost is very greatly reduced; in fact, is little if any more than the ordinary building that burns and rots. The Hy-Rib Garage can be readily built by any good, farm mechanic. We show complete details of a typical single car garage built of steel sections and cement plaster on Hy-Rib, which makes a fireproof building.

A large number of barns have been burnt down by automobiles catching fire while in them, showing the necessity of having a separate fireproof garage.

### HOW TO BUILD A HY-RIB GARAGE

The foundations for the walls depend upon local conditions such as the nature of the soil, variations of temperature, amounts of frost, etc. The design indicated should be satisfactory for first class ordinary conditions. Use the best materials for the concrete of the following mix:

Portland Cement.....	1 part.
Sand .....	3 parts.
Stone or Gravel .....	5 parts.

The steel frame for the walls (as detailed) is secured from any good structural iron shop, and is readily erected without expert mechanics. This steel work should be true to line and thoroughly bolted together, as indicated.

The Hy-Rib for Walls and Roof is next set in place. The sheets of Hy-Rib are interlocked at the sides and securely wired together every 24 inches. In the side walls, the lapped ends of sheets are interlocked and thoroughly wired together at every rib. The Hy-Rib is rigidly attached to the steel uprights by special clips or by strong, galvanized wire every 10½ inches at the sides of the sheets. One or two lines of temporary supports are placed under Hy-Rib roof and may be readily made of light wood timbers. These supports are removed as soon as the concrete on top of the Hy-Rib has thoroughly set.

The concrete for the roof is applied as specified under "How to Build Hy-Rib Roofs" on page 10.

The Plaster for the walls is applied as specified under "How to Build Outside Walls and Sidings" on page 8.

The roofs should be covered with a good standard roofing material.

The last ¾-inch of the side walls should be waterproofed with Trus-Con Waterproofing Paste.

The ground floor is ordinarily made of concrete and can be laid either before or after erecting the walls and roof. In building this floor, place a three-inch layer of dry cinders, covering it with a four-inch concrete slab, consisting of three inches of 1:3:5 mixture and one inch of finish (one part cement and three parts sand). The finish coat shall be laid continuously with the concrete base. The frames for doors and windows are built directly into the construction and are readily made by any local carpenter or wood-working shop. Any type of door or window of course can be substituted for those here shown.



Hy-Rib Garage for T. H. Kane, Youngstown, Ohio.  
Ready for Plastering and Completed.

Write for Hy-Rib Garage Folder, Containing Complete Details and Specifications





Hy-Rib Garage for Dr. Moran, Detroit, Michigan. (During Construction).



Hy-Rib Garage for Dr. Moran, Detroit, Mich. (Completed).

### OTHER HY-RIB GARAGES

A garage exactly similar to those outlined but not quite so fireproof or permanent, can be built at a lower cost by substituting wood members of equal strength for the steel framing shown in the design.

Any type, design or size of garage can be economically built with Hy-Rib construction.

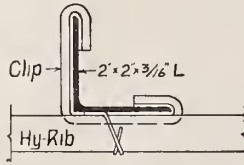
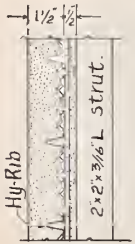
We will gladly make detail drawings of any special garage for which Hy-Rib is ordered.

We have distributing centers for Hy-Rib in nearly every section of the country or can ship promptly from our Youngstown shops.

# HY-RIB AND CONCRETE ON THE FARM.



TRUSSED CONCRETE STEEL CO.,  
DETROIT, MICH.

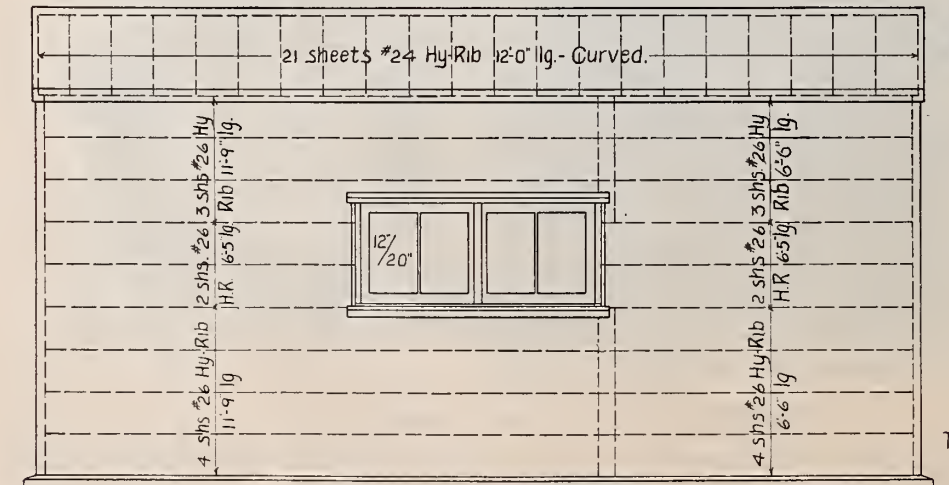
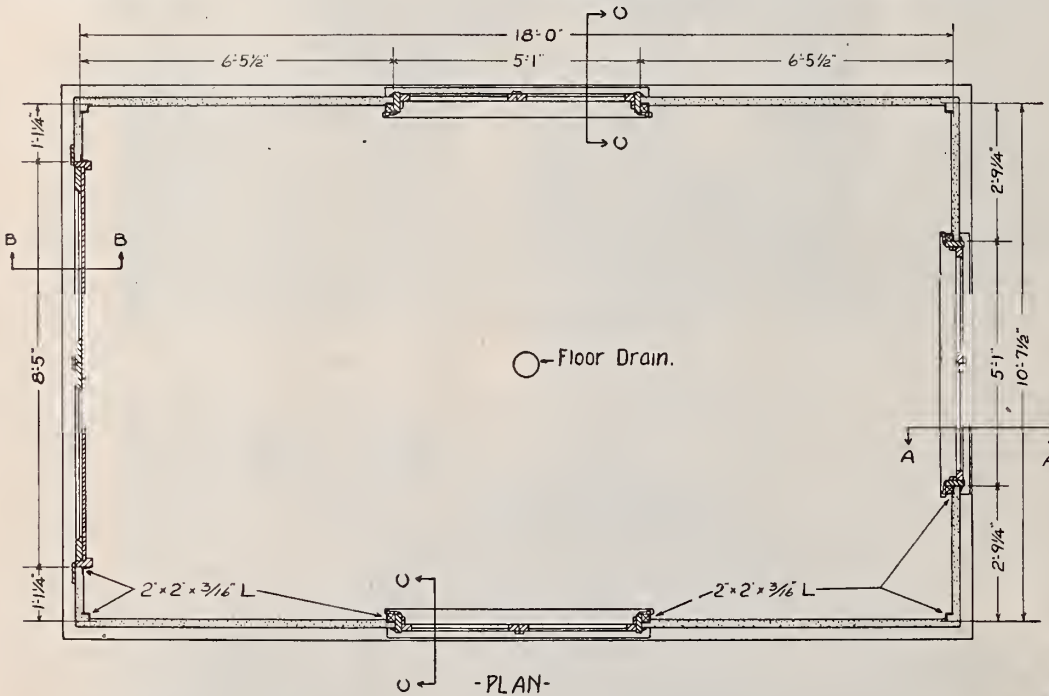


HYRIB CLIP FASTENING.

-SECTION THRU WALL-

-BILL OF MATERIAL-

No	Size	Length	No	Size	Length
2	5" I Beam	18'-4 1/2"	21	#24 Hy Rib	12'-0"
2	5 " "	11'-0"	18	#26 " "	1'-0 3/4"
12	2x2x3/16 L	8'-1"	4	#26 " "	2'-8 3/4"
16	6x6x3/8 L	0'-1 3/4"	8	#26 " "	6'-5"
12	6x4x3/8 L	0'-1 3/4"	14	#26 " "	6'-6"
12	5/8 Bolt	0'-5"	2	#26 " "	10'-1 1/2"
2	1/2 Cup Bar	18'-6"	7	#26 " "	10'-6 1/2"
2	1/2 " "	11'-2"	2	#26 " "	10'-9"
2	Doors 4'-1" x 7'-10 1/2" x 2 1/2"		14	#26 " "	11'-9"
3	Double Windows		170	Hy Rib Clips for 2x2" L	

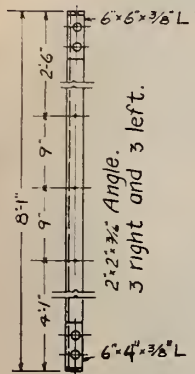


-SIDE ELEVATION-

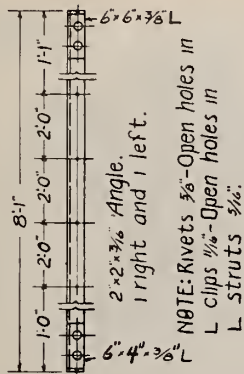


• FIREPROOF GARAGE •  
10'-6" x 18'-0"  
HY-RIB ROOF AND  
SIDE WALLS WITH  
STEEL FRAMEWORK.  
TRUSSED CONCRETE STEEL CO.  
DETROIT-MICH.

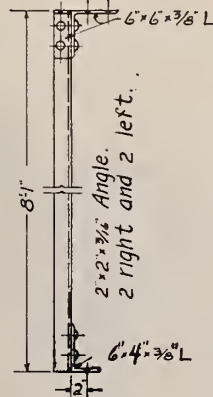




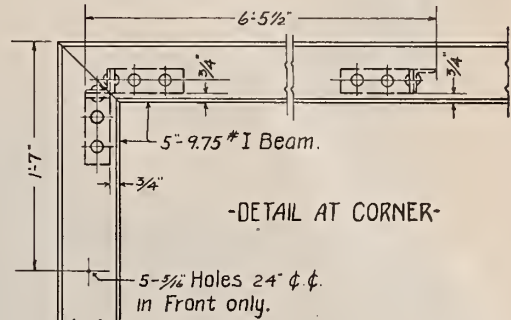
-STRUT AT WINDOWS-



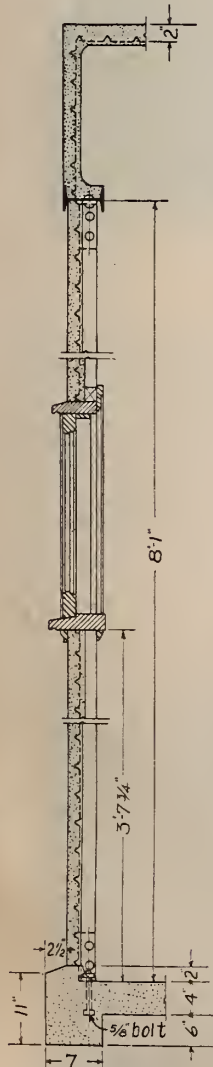
-STRUT AT DOOR-



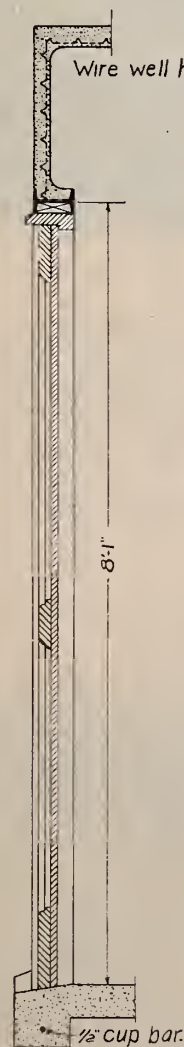
-STRUT AT CORNER-



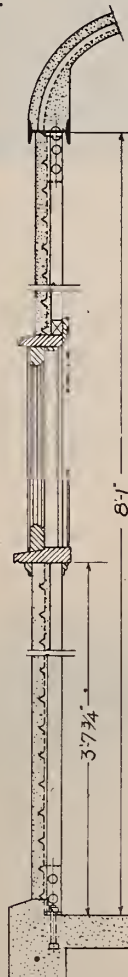
-DETAIL AT CORNER-



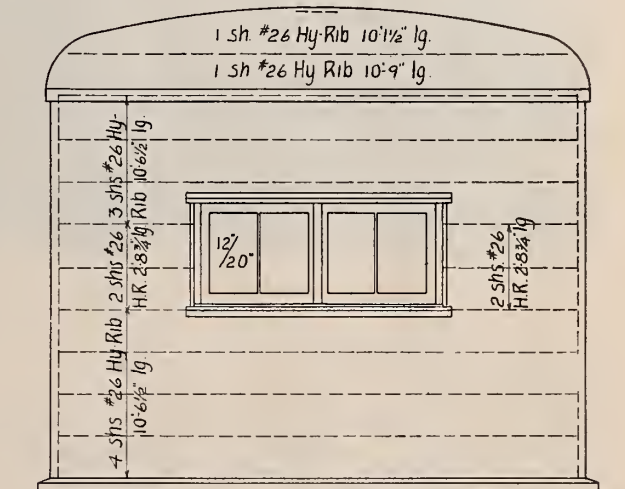
-SECTION A-A-



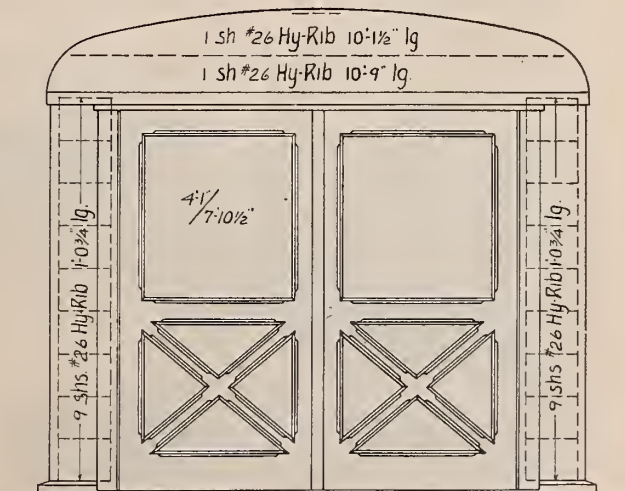
-SECTION B-B-



-SECTION C-C-

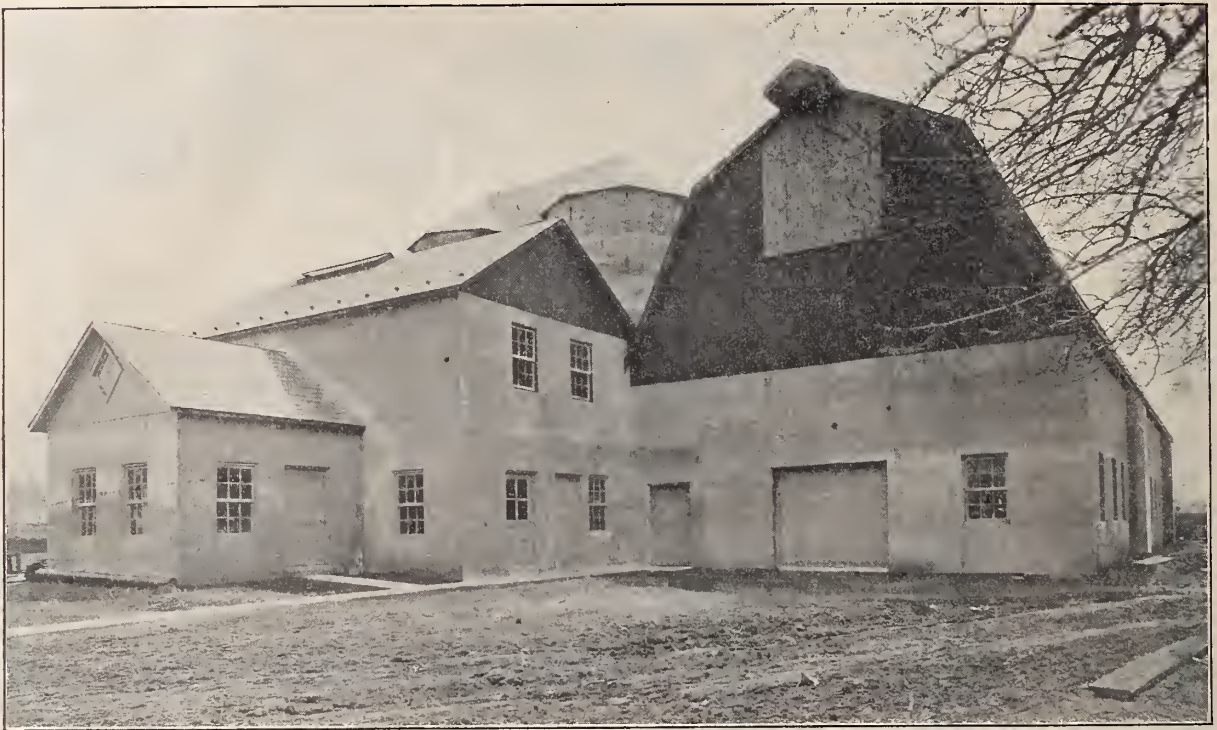


-REAR ELEVATION-



-FRONT ELEVATION-

10'-6"x18'-0" Garage



### HY-RIB CONCRETE BARN

Good sanitary barns are a real economy. They provide a dry, well ventilated and uniform-temperature shelter, insuring the greatest productiveness and vitality of dairy cows. Poorly built barns are very expensive, because of their dampness, which breeds disease and their inadequate ventilation and construction, which lowers the vitality of the cow and accordingly reduces the productiveness. With the improved Hy-Rib concrete design of barns, such buildings can be built very inexpensively and besides giving the best possible shelter to cows, are absolutely fireproof, permanent and require no expense for repairs. We illustrate a number of typical designs for strictly modern barns. In all of these we have indicated the system of ventilation introduced by Professor King, of the University of Wisconsin, which insures uniform flow of fresh air, without sudden drafts.

Barns may be made two stories high with stable in first floor and storage above, or a single story in height. The building with storage on second floor is usually more economical and with our design there is no chance for moisture and foul air to penetrate into the hay-loft.

Outside walls are built with wood studs covered with Hy-Rib on the outside and Rib Lath on the inside, as described under "How to Build Walls," page 8.

The roof, in a similar manner, is built with wood joists covered on the outside with Hy-Rib and concrete, and the ceiling underneath made up of Rib Lath plastered with cement mortar. Similarly, the floor of the loft is made up of wood joists on which Hy-Rib has been laid and covered with concrete. The ceiling is made of Rib Lath attached to the joists and plastered with cement mortar. The wood girders, as well as the wood posts if desired can be covered with Rib Lath and plastered, so that the entire interior will have a cement finished appearance.



[Concrete Barn and Concrete Fence for Wind Break.



Concrete Partitions in Barn.





Hy-Rib Roofs for Stables, City Waterworks, Detroit, Mich. Smith, Hinchman & Grylls, Architects.

The stable floor resting on the ground is built of concrete and sloped to a common center, or to one end of the barn. The gutters are in rear of the stall. Stall mats made of seven-eighths inch lumber may be used over the concrete if desired, so arranged that they can be readily removed to facilitate cleansing. The mangers are built of Hy-Rib plastered with cement, as well as the mixing bins, chutes and water-cooling vats. Their construction is very simple and all that is necessary is to set up the Hy-Rib sheets and apply the cement plaster to both sides. A pipe rail is shown separating the stalls but any other form of stall may be used.

In this way the barn is entirely finished in concrete—walls, ceilings, floors, etc. It is of course absolutely sanitary, vermin-proof, germ-proof and is always easily kept clean by washing. The King system of ventilation may be readily installed by using the space between the wall studs and floor joists as vents for fresh and foul air. Bins for storage of grain and feed can be built also with the Hy-Rib plastered with cement. The concrete roof is ordinarily covered with some good, standard roofing to insure absolute weatherproofness. In outside walls the finish coat is of course always waterproofed with Trus-Con Waterproofing Paste as directed under "How to Build Outside Walls."

For the windows, we have indicated United Steel Sash, which is made up of solid steel sections. This sash of course is absolutely fireproof and permanent, and besides gives the greatest possible lighting and ventilation to the interior. Builders of course may substitute wood sash for this steel sash and in fact adopt only such sections of our whole general design as may be suitable for their purposes.

The drawing shown gives a design of a barn for forty cows, with two silos and two liquid manure cisterns. Details for silos and cisterns are given on pages 34 and 85. The design is typical of good modern construction and of course may be varied in any way desired in regard to size, arrangements, etc.



Dairy Barn with Concrete Manger, Stall Floor, Gutter and Drive.



# CONCRETE DAIRY BARN

REINFORCED WITH

## HY-RIB & RIB LATH

ON WOOD FRAME

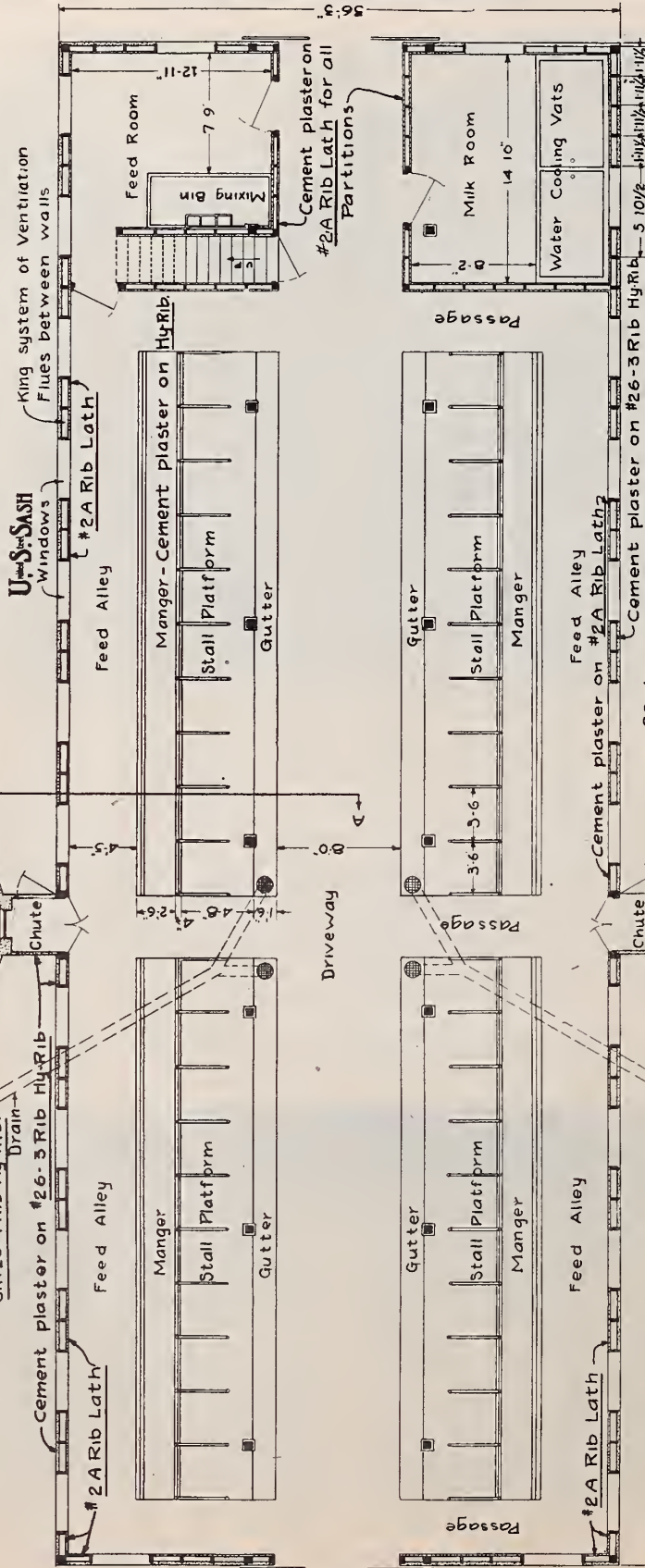
NO FORMS REQUIRED



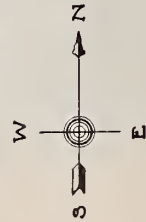
Trus-Con Waterproofing Paste should be used in the last coat to make the walls waterproof.

Cistern for liquid manure  
Cement plaster on #26-4 Rib Hy-Rib.  
Drain—

Silo 14'-0" Dia.  
Cement plaster on #24-4 Rib Hy-Rib  
See Silo details.

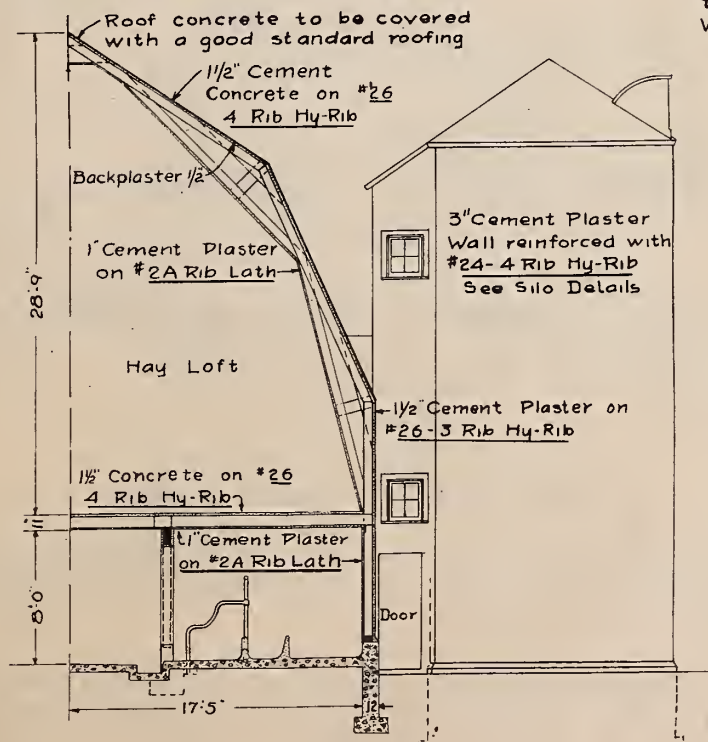
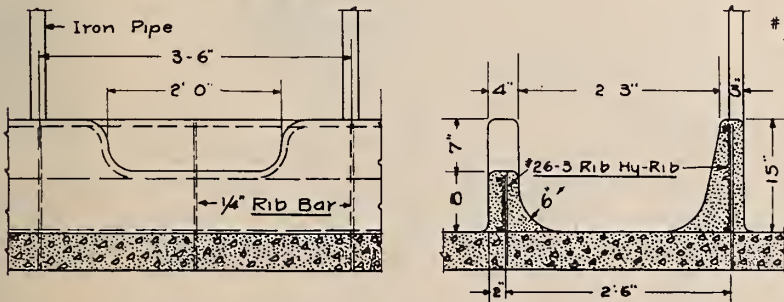
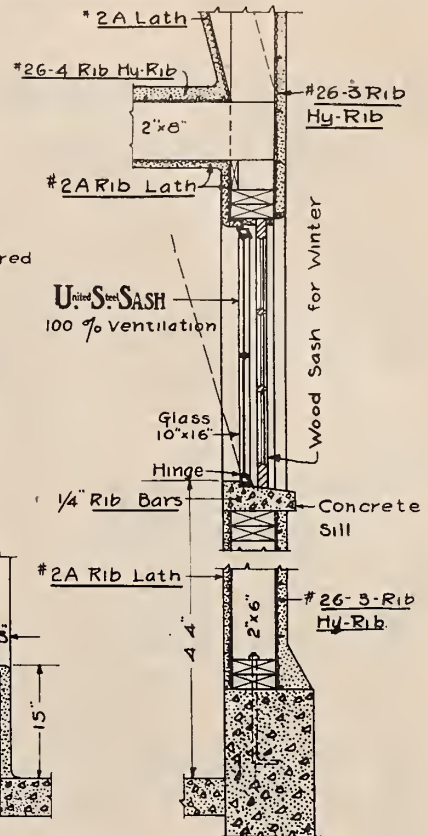
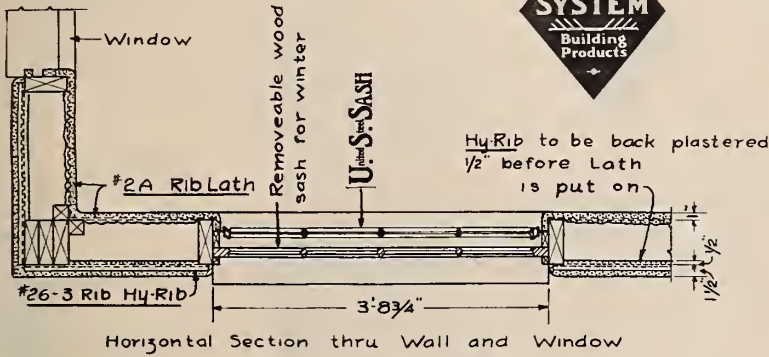


Hy-Rib Cement Construction is Fire-Vermin-Moisture-Rust-and Rot-Proof and should be used for all Farm Buildings.



Concrete Dairy Barn—Design No. 1.





Concrete Dairy Barn  
Design No. 1.



Concrete Dairy Barn—Design No. 2.

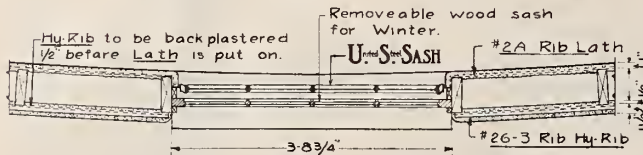
# CONCRETE DAIRY BARN

REINFORCED WITH

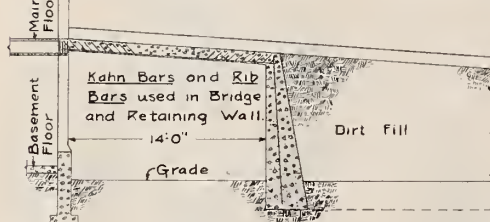
## HY-RIB & RIB LATH

ON WOOD FRAME

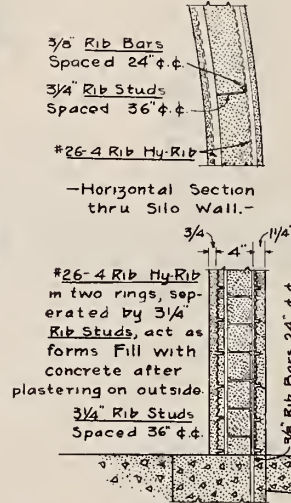
NO FORMS REQUIRED



Horizontal Section thru Wall and Window—

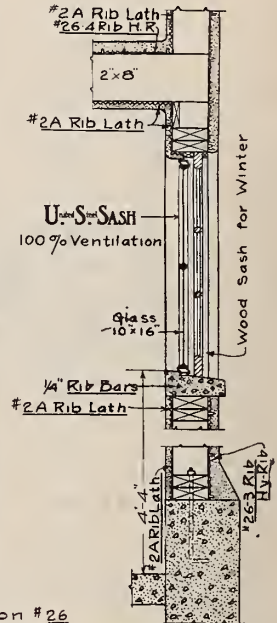


Section thru Bridge to Main Floor—

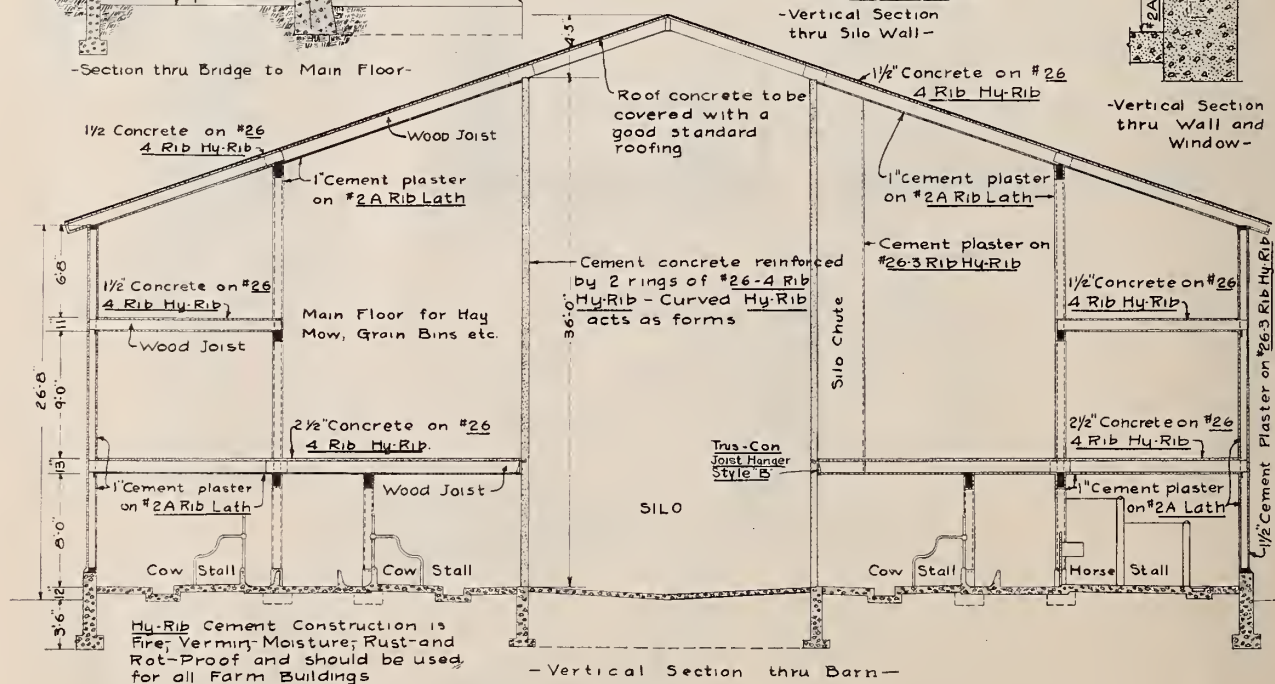


Horizontal Section thru Silo Wall—

Vertical Section thru Silo Wall—



Vertical Section thru Wall and Window—



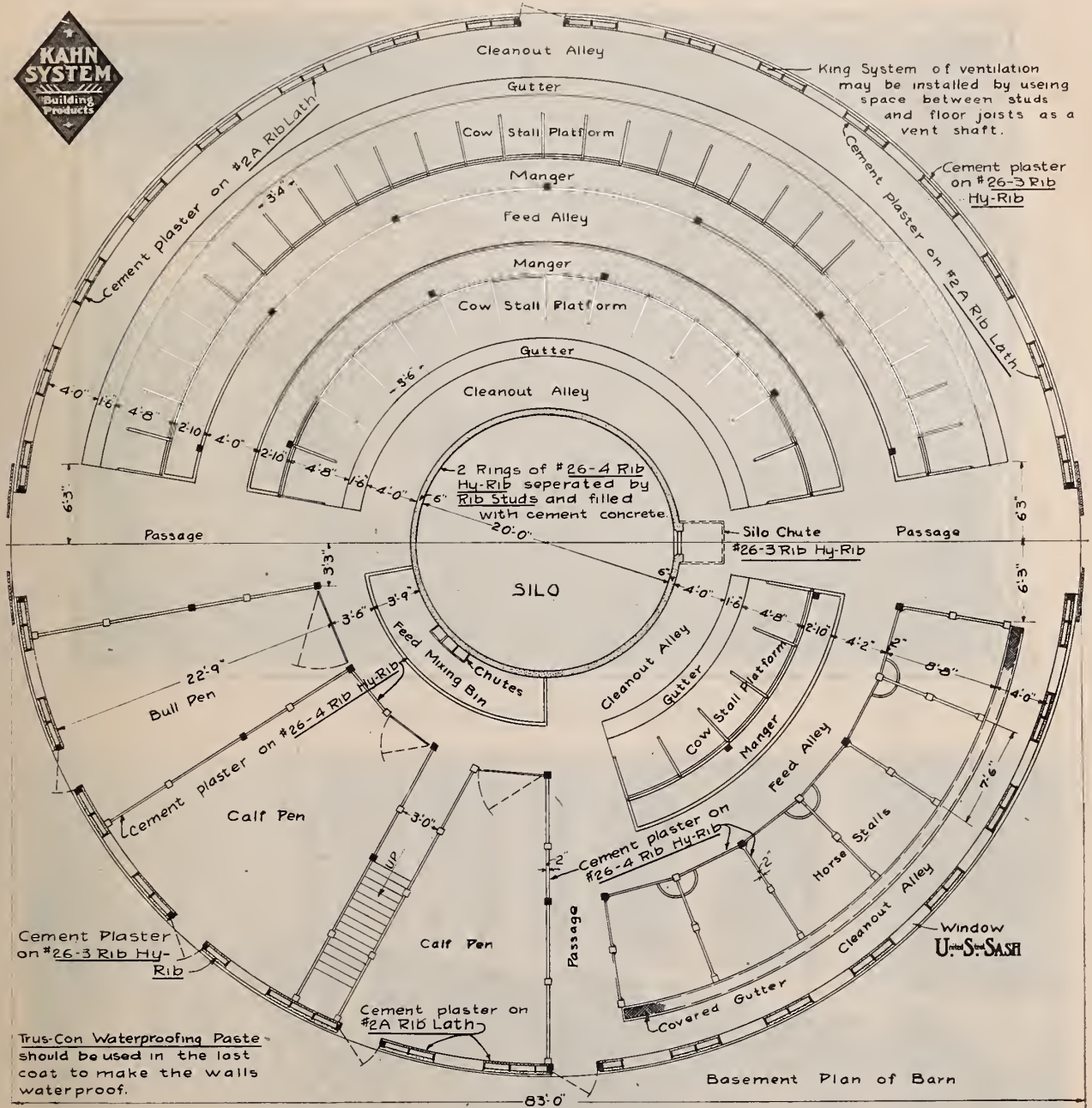
Vertical Section thru Barn—

## MODEL ROUND DAIRY BARN

This round barn has stalls for forty-seven cows, stalls for six horses, one bull pen, two calf pens, and mixing bin and solid-wall silo in the center. One of the calf pens may be changed to a milk house, and arrangement of stalls altered as found desirable.

The construction of walls, partitions, floors and roofs is of the standard type previously described. Outside walls are built with Hy-Rib on the exterior of the studs and Rib Lath on the interior. Similarly, Hy-Rib covered with cement is used for the floors and roofs on top of the joists while the ceilings are all of Rib Lath plastered with cement.





### Concrete Dairy Barn—Design No. 2.

The solid wall silo in the center is made of construction heavy enough to carry the floors and roofs. The solid wall is built with an inner and outer circle of Hy-Rib, separated by 3¼ inch Rib Studs. The outside of the outer ring and the inside of the inner ring are plastered with cement mortar, giving the appearance of a hollow concrete wall. This hollow pocket is filled with concrete to make a solid wall. No centering or forms are required. The silo chute as described on page 39 is also built with Hy-Rib.

The main floor is reached, as in all cases where it is above grade, by a built-up slope and bridge. This bridge is reinforced concrete on wood forms, and reinforced with Kahn Trussed Bars and Rib Bars in accordance with Table, page 76. The retaining walls are of reinforced concrete design, built with wood forms and reinforced with Rib Bars.

For the round barn of this large diameter, the Hy-Rib is shipped straight and is easily sprung the small amount necessary. The Hy-Rib for the silos is shipped bent to exact curve.



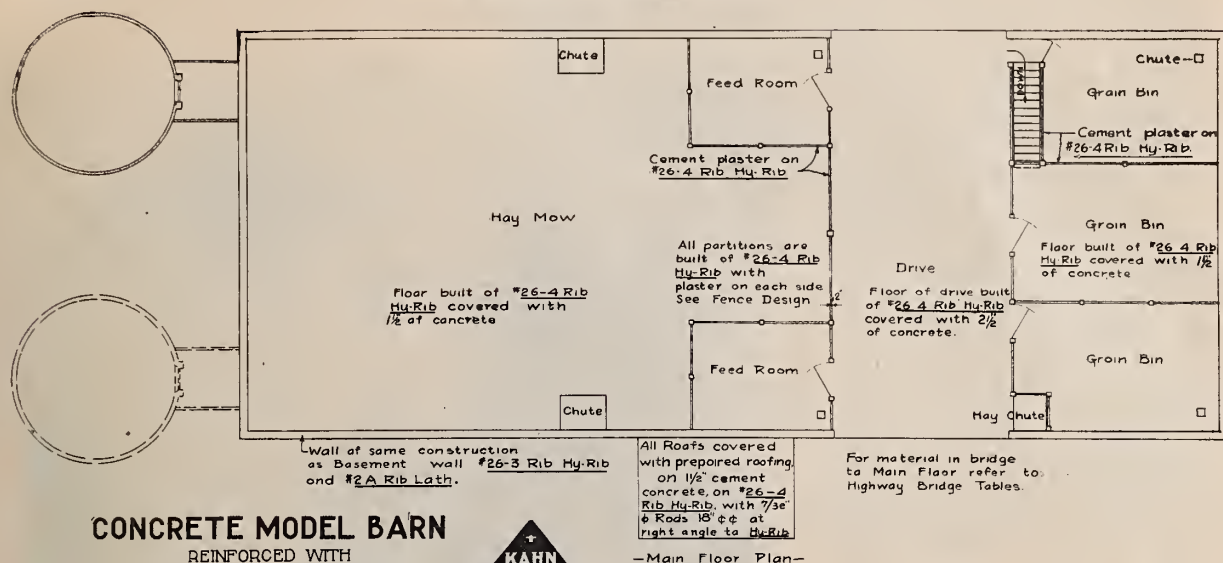
Cow Stalls Showing Concrete Mangers.



Cow Stalls Showing Concrete Floor, Gutter and Partitions.

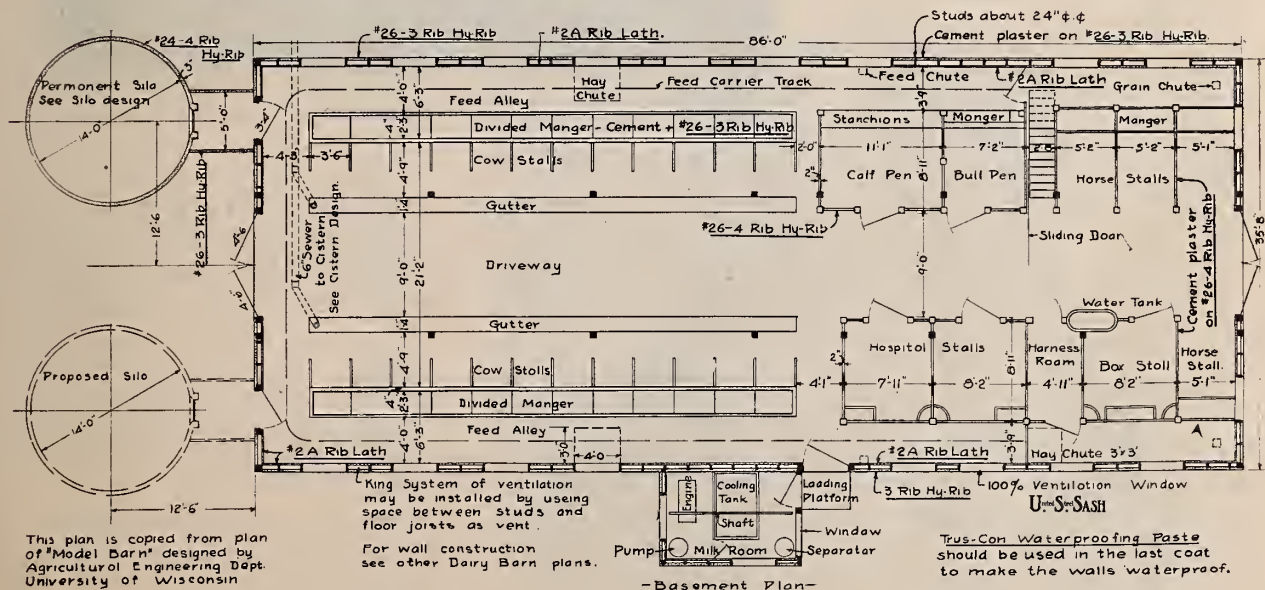


### Dairy Barn—Design No. 3.



## CONCRETE MODEL BARN

REINFORCED WITH  
**HY-RIB & RIB LATH**  
ON WOOD FRAME  
NO FORMS REQUIRED



## UNIVERSITY OF WISCONSIN MODEL BARN

This concrete model barn follows the general features of the design recommended by the University of Wisconsin, one of the strongest advocates of the use of concrete for all farm buildings. The use of Hy-Rib and Rib Lath throughout the construction of this building is similar to that recommended for other types of barns. The silos in this case follow our standard type of design for silos illustrated and described in detail on pages 34 to 47.

In showing these three general types of design for barns, we have given an illustration of what are the best and most economical plans in such construction. It is of course impossible to attempt to illustrate all of the varied requirements for barn buildings, but the practical farmer will readily see how he can adopt this improved method of construction to any plans he may have on hand. In any case where it is desired to order our material (HY-RIB) we shall be pleased to make detailed drawings showing just how the Hy-Rib is used as well as to order the material required.



## HY-RIB CONCRETE SILOS

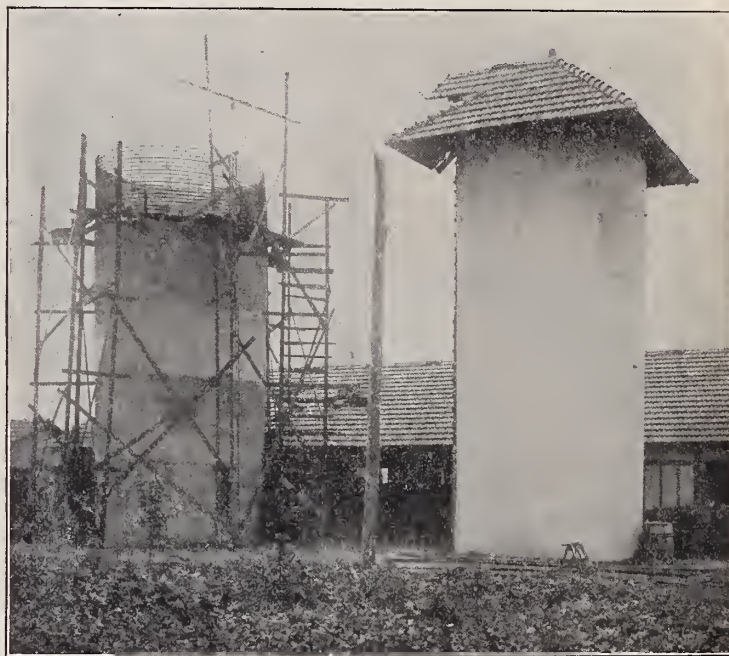
Milk of the best quality and yielding the greatest net profit is produced from cows feeding on silage, because of its cheapness and great food value. Cattle raisers find that better beef, as well as more rapid gains in weight, are obtained by feeding silage. Sheep, hogs and even horses are fed silage to advantage. Of course, the animals are not fed exclusively on silage, but it is an important factor in their feeding and development. Because of these facts the practical farmer, who would make the most out of his property, finds it necessary to use silage as food and to build silos for storing it.

In building silos, concrete is the one and only real satisfactory material to use. So true is this that many farmers have found it real economy to build even the heavy,

cumbersome, expensive, solid concrete silos, which require special wood form-work, costing a great deal of money. The use of Hy-Rib makes the most satisfactory, as well as the least expensive, form of concrete silo. The Hy-Rib is shipped bent to the exact curve, so that all that is necessary is to set it in place and apply the cement mortar in the form of a plaster. Hy-Rib does away entirely with the great expense and labor required in centering.

A concrete silo built of Hy-Rib is monolithic and thoroughly re-enforced with steel, so as to prevent any chance of cracking, and to give the greatest possible strength. A solid monolithic wall is air tight, preventing the air from the outside getting to the silage and molding it. This is essential in a properly built silo, as cattle will not eat moldy silage. Contrast this with the old style wood silo, made up of a number of staves which swell and contract, allowing air to pass between them. The walls of a Hy-Rib concrete silo are waterproof and moistureproof, preventing the absorption of water from the silo and its evaporation. Porous walls are unsatisfactory, because they sap the juices from the silage and cause it to become dry and moldy for a considerable distance inward.

Concrete is one of the most important and best known non-conductors of heat and cold. A Hy-Rib concrete silo protects the silage from freezing and maintains it at a nearly uniform temperature. The concrete shuts out the heat and cold, and being airtight there are no chances for air currents to enter. Concrete is, of course, verminproof, and prevents rats from ruining the silage. Concrete silos are absolutely permanent and do not wear or rot out. They require no expense for maintenance, and are not affected by moisture and the juices in the silage. They do not swell or shrink up. Contrast this with the ordinary wood silo, which absorbs moisture, requires continual expense for painting, and owing to contraction and expansion must be continually adjusted in order to be kept in proper condition. The Hy-Rib concrete silo requires no expense for maintenance and is proof against age and fire. The only cost of a concrete silo is the original one.



Hy-Rib Silos for J. R. Cross & Co., Jersey Farm, Fairhope, Ala.



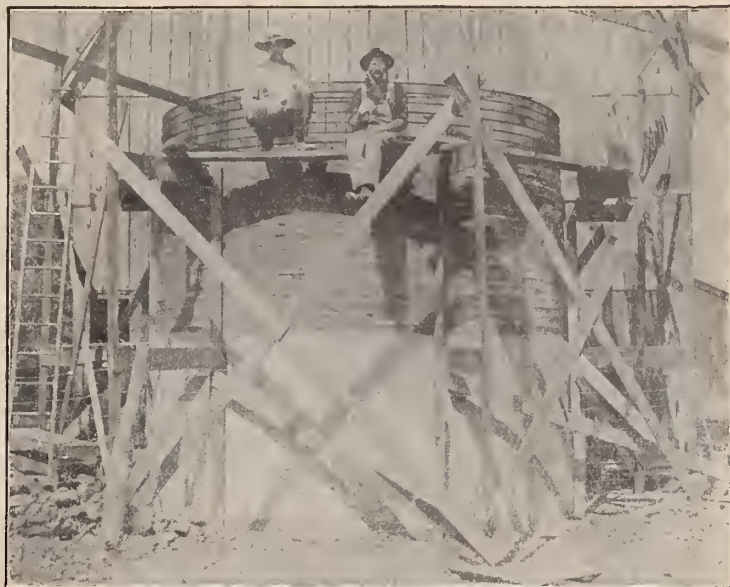


Consider these facts and you will find the Hy-Rib concrete silo is in every way the cheapest possible silo you can build. In fact, a concrete silo with Hy-Rib is very inexpensive and can be constructed rapidly by any good farm mechanics. The increased profits you make annually from having your silage better preserved and of higher quality also amounts to a very large item.

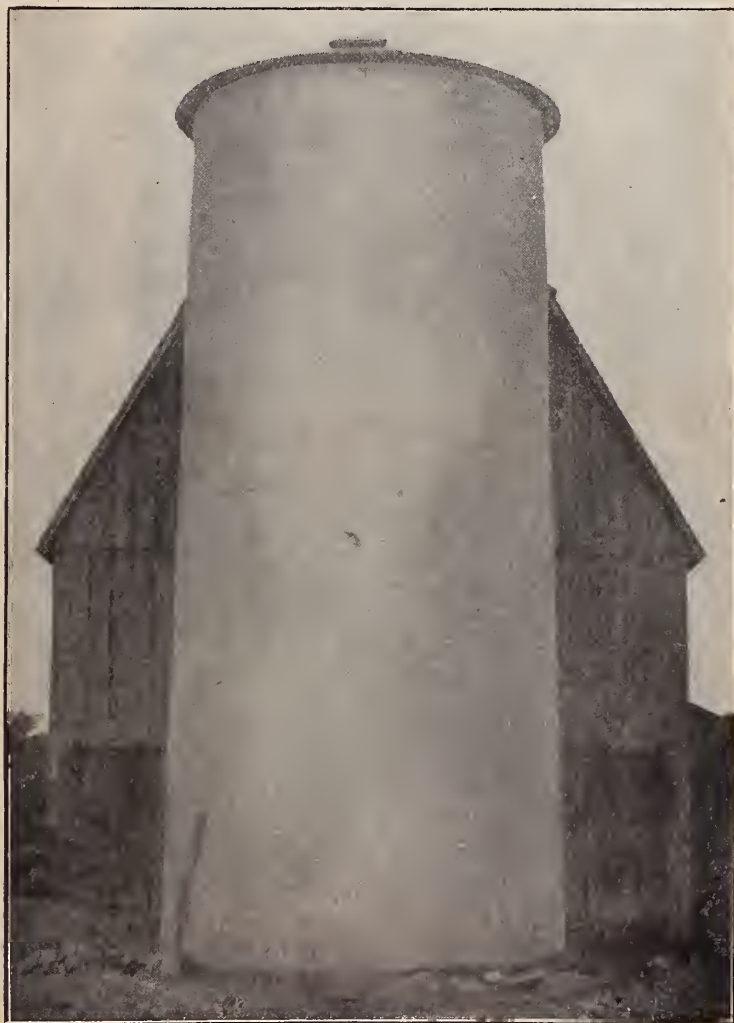
### THE SIZE OF THE SILO

Depth in a silo is considered an advantage because the additional weight makes the silage more compact and the small area of silage exposed at the top is less likely to mold. The height is often limited however by other practical conditions. Generally speaking, in order to have fresh silage under all circumstances the diameter should be of such size that approximately two inches would be fed from the surface each day, as in this way the silage is always kept fresh. Where one silo is used in this way, it should be of such depth as to provide silage for the entire feeding season. Thus a silo thirty feet in depth would provide silage for 180 days or six months, two inches being removed from the surface each day.

Table No. 1, based on the observations of Prof. F. H. King, gives the capacity of the various sizes of round silos, and the amount which must be fed daily to lower the surface about two inches per day. It is assumed that the silage is made of well matured corn, and that after the silo has been built and allowed to settle for two days, it is refilled to the top. The amount which should be fed daily is based upon an average weight of 40 pounds per cubic foot.



Hy-Rib Silo for C. C. Corey, New Haven, Mich., in Course of Construction.



Hy-Rib Silo for Stock Farm of C. C. Corey, New Haven, Mich.



TABLE 1. CAPACITY OF ROUND SILOS

Inside Diameter	Height	Capacity Tons	Acreage to fill. 15 Tons to the Acre	Amount that should be fed daily, pounds
10	28	42	2.8	525
10	30	47	3.0	525
10	32	51	3.4	525
10	34	56	3.7	525
10	38	65	4.3	525
10	40	70	4.6	525
12	28	61	4.1	755
12	30	67	4.5	755
12	32	74	5.0	755
12	34	80	5.3	755
12	36	87	5.8	755
12	38	94	6.4	755
12	40	101	7.3	755
14	28	83	5.5	1030
14	30	91	6.1	1030
14	32	100	6.7	1030
14	34	109	7.2	1030
14	36	118	7.9	1030
14	38	128	8.5	1030
14	40	138	9.2	1030
16	28	108	7.2	1340
16	30	119	8.0	1340
16	32	131	8.7	1340
16	34	143	9.5	1340
16	36	155	10.3	1340
16	38	167	11.1	1340
16	40	180	12.0	1340
18	30	151	10.0	1700
18	32	166	11.0	1700
18	34	181	12.0	1700
18	36	196	13.2	1700
18	38	212	14.1	1700
18	40	229	15.2	1700
18	42	246	16.4	1700
18	44	264	17.6	1700
18	46	282	18.8	1700
20	30	187	12.5	2100
20	32	205	13.6	2100
20	34	224	15.0	2100
20	36	243	16.2	2100
20	38	262	17.5	2100
20	40	281	18.8	2100
20	42	300	20.0	2100
20	44	320	21.3	2100
20	46	340	22.6	2100
20	48	361	24.0	2100
20	50	382	25.5	2100

The Animal Husbandry Section has furnished the following table in regard to the approximate amount of silage required per day for various kinds of stock.

TABLE NO. 2 AMOUNT OF SILAGE FED PER DAY.

Kinds of Stock.	Daily Ration Pounds.
Beef Cattle:	
Wintering Calves, 8 months old.....	15 to 25
Wintering Breeding Cows.....	30 to 50
Fattening Beef Cattle, 18-22 months old:	
First stage of fattening.....	20 to 30
Latter stage of fattening.....	12 to 20
Dairy Cattle.....	30 to 50
Sheep:	
Wintering Breeding Sheep.....	3 to 5
Fattening Lambs.....	2 to 3
Fattening Sheep.....	3 to 4

These two tables may be used to determine the size of silo needed to fulfil the various requirements. For instance, if the silage is to be fed to a herd of 40 dairy cattle at the rate of 40 pounds per head per day, a silo 16 or 18 feet in diameter will be satisfactory,





## LOCATION OF THE SILO

A silo located outside of a building meets with the greatest favor. The reason for this is that it is not economical to take up space in a building which may profitably be put to other uses. A silo, when located on the inside, is often unhandy to fill. By locating the silo outside and only connecting it with a passage provided with doors, the objectionable odors of the silage may be kept out of the building. A very common arrangement is to locate the silo so that the passage-way from the silo to the barn is a continuation of the feedway in the barn. In only a very few cases, such as a large round barn, is there any advantage at all in having the silo inside the barn.

## HOW TO BUILD A HY-RIB CONCRETE SILO

The foundation for the silo should be of sufficient size to prevent any appreciable settling, and should extend below the frost line. The space within the foundation walls is often excavated and increases the capacity of the silo. Foundations should be made of one part cement, two and one-half parts clean, coarse sand, five parts of broken stone. A tile drain at the bottom of the footing will carry off any surface water that may be running down along the sides of the silo.

Our drawings show a typical design for a 14 foot diameter silo. The construction for other sized silos of course will be similar. Three-eighth inch Rib Bars, 2 feet 6 inches long should be placed 2 feet on centers around the foundation wall and imbedded one foot deep into the concrete before it has set. The first ring of Hy-Rib will be placed on the outside and wired well to these bars. Form B is now placed in position and the three  $\frac{5}{8}$ -inch Rib Bars, re-enforcing the door lintel, and four  $\frac{3}{8}$ -inch Rib Bars re-enforcing the door jambs are wired in place. The concrete in the forms should be made of: One part cement; two parts clean, coarse sand; four parts broken stone. Allow the concrete



Frame Work to Support Hy-Rib Roof.



Placing Hy-Rib and Concreting.



Hy-Rib Acts as a Form and Reinforcement for the Concrete.



to set hard and after cleaning the top of the wall with a stiff wire brush, wet thoroughly and place form A in position and fill with concrete. If two sets of form A are used they may be used alternately, and in this way twice as much work accomplished in each day. The forms should be oiled or greased before using to prevent swelling and adhesion of the concrete.

The Hy-Rib is placed one sheet above the other, with sides and ends interlocked and well wired together every twenty-four inches on the sides and each rib at ends. The Hy-Rib along the side of the door openings should be placed as far into the forms as shown on the drawings to insure a firm anchorage in the door jams. Three  $\frac{5}{8}$  Rib Bars 9 feet long should be wired to the Hy-Rib.

Plastering on the Hy-Rib should be started as soon as the forms around the doorway have been removed. The first coat of plaster should be placed on the outside of the silo, and is made up of a mixture as follows: Portland cement 5 parts; Sand 12 parts; Lime paste 1 part. Mix and apply as directed under Outside Wall Construction. While still wet it is scratched over to form a key for the finish coat. The finish plaster coat should be at least  $\frac{3}{4}$ -inch in thickness and should be made absolutely waterproof by using Trus-Con Waterproofing Paste in the water used in mixing, using one part of paste to twelve parts of water. The inner face of the Hy-Rib is plastered to the required thickness. Trus-Con Waterproofing Paste should also be used on the finishing coat of the inside of walls to prevent absorption of the juices of the silage. See that the silo walls are plastered to the proper thickness called for on drawings. The Waterproofing Paste is of course used only on the last  $\frac{3}{4}$ -inch of both the inside and outside. The walls should be protected from too rapid drying or the direct rays of the sun by means of damp canvas or sprinkling for at least two days.

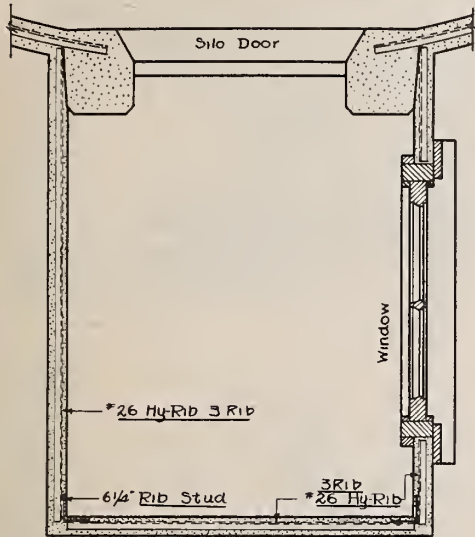
The drawings give complete details for the construction of a concrete roof, which can be readily built with Hy-Rib. The wood centering required for this roof is very simple, as no sheathing whatever is necessary, and these forms can be removed and used for other silos after the concrete has set. The concrete for the roof is: One part Portland Cement; Two parts clean, sharp sand; Four parts gravel.

Details also show the complete design for doorways, which will be found to follow the best of modern practice for silo construction. These doors should be well fitted so as to be air tight, and the joints can be made more perfect by felt pads or gaskets. Some silo owners use tar paper to cover the cracks around the doors; others use clay worked into the consistency of putty in the joints.

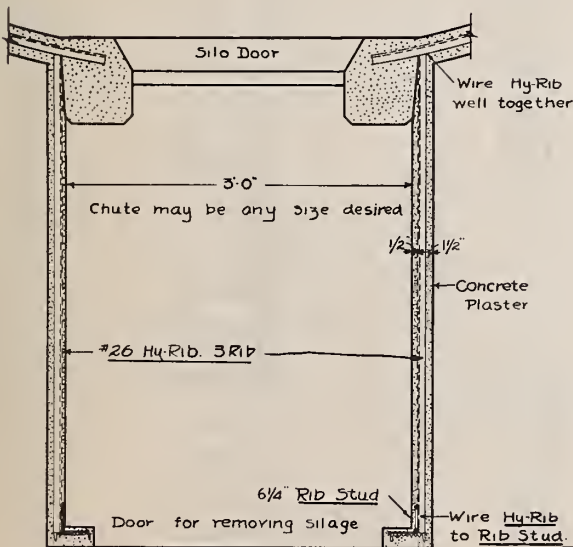
The design described is that of the regulation single wall Hy-Rib concrete silo. We consider the single wall silo the best construction for all general purposes. The wall provides ample protection against frost, heat and cold, and is many times more satisfactory in this respect than the old style wooden silo. Some builders, however, may prefer to build a double wall silo with air space in between, and we have shown complete details of this type.

The construction of this silo is very similar to the single wall silo. The inner ring of Hy-Rib corresponds to the complete single wall silo, except that Rib Studs are attached to the inner rings before plastering. After this inner ring has been thoroughly plastered to the required thickness on both inside and outside, the outer ring of Hy-Rib is attached to the Rib Studs and the ends are extended well into the slot of the door jam. It is only necessary to plaster the outside of this outer ring. Trus-Con Waterproofing Paste should be used in the outer  $\frac{3}{4}$ -inch finish of the outside wall and the inner  $\frac{3}{4}$ -inch of the inner wall. Strips of tarred paper may be placed horizontally in the air space between the two walls, in order to break up any circulation of air. Roofs are built the same as for single wall silo, as indicated.





-Section thru Window-



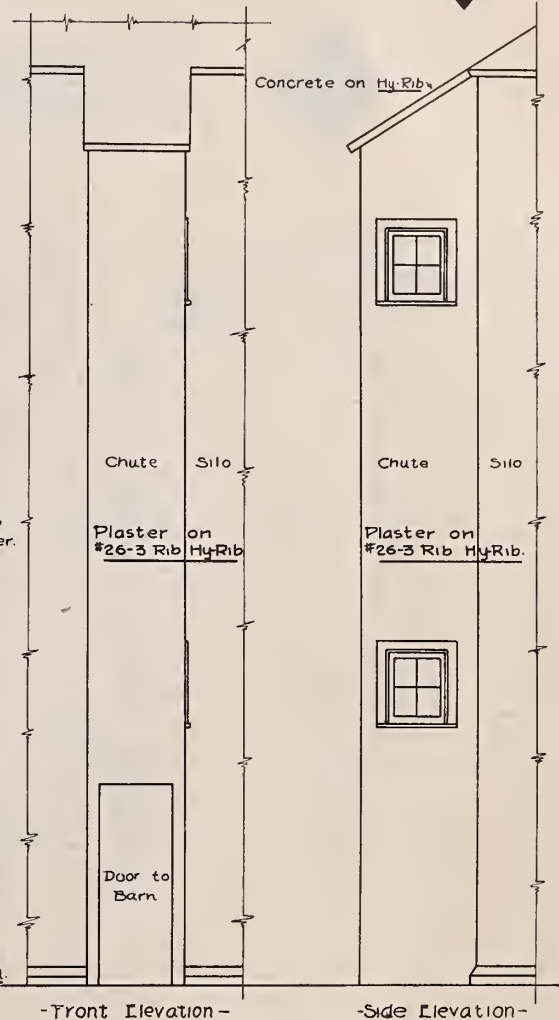
-Section thru Door-

## CONCRETE SILO CHUTE

REINFORCED WITH

**HY-RIB**

NO FORMS REQUIRED



## HY-RIB CONCRETE SILO CHUTE

A chute is necessary for every silo, as it keeps the silage close together as it falls and protects it from wind or rain. A concrete chute is very easily built of Hy-Rib, plastered with cement, and is of course fireproof and permanent. The construction is very simple, as all that is necessary is to set up the Hy-Rib sheets and apply the cement mortar plaster to them. The roof may be made a continuation of the silo roof, and windows and doors placed as desired. The Hy-Rib for the sides can be wired to the Hy-Rib in the silo walls. At the corners the Hy-Rib is held together by being wired to 6 1/4 inch Rib Studs as indicated.

## -CONCRETE SILO-

-WITH CONTINUOUS DOORS-

REINFORCED WITH

-HY-RIB-

-HY-RIB IS SHIPPED BENT TO EXACT CURVE-

-TRUSSED CONCRETE STEEL CO.-

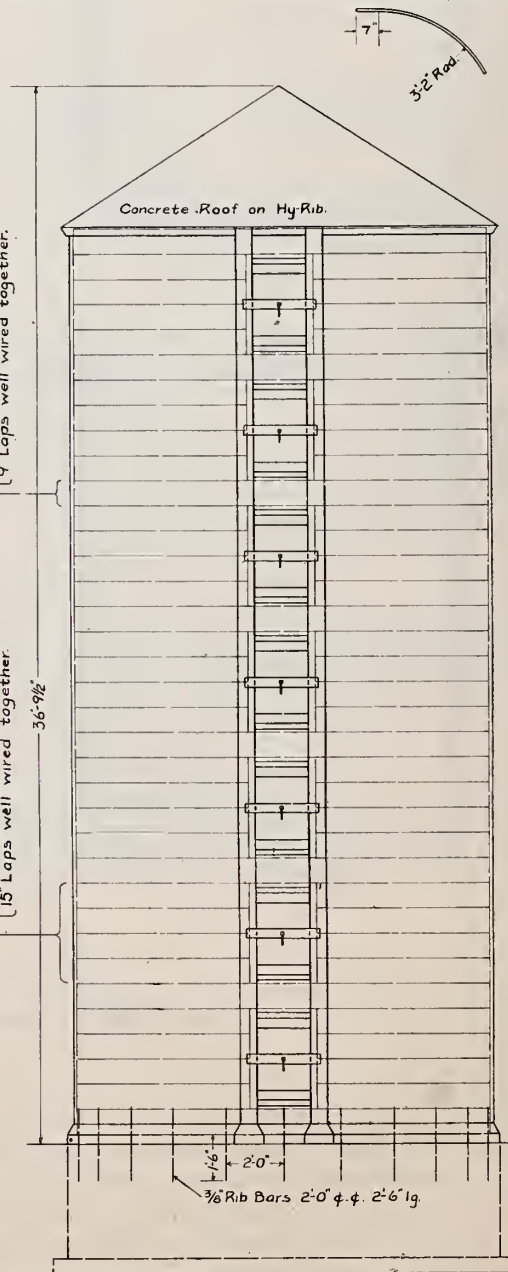
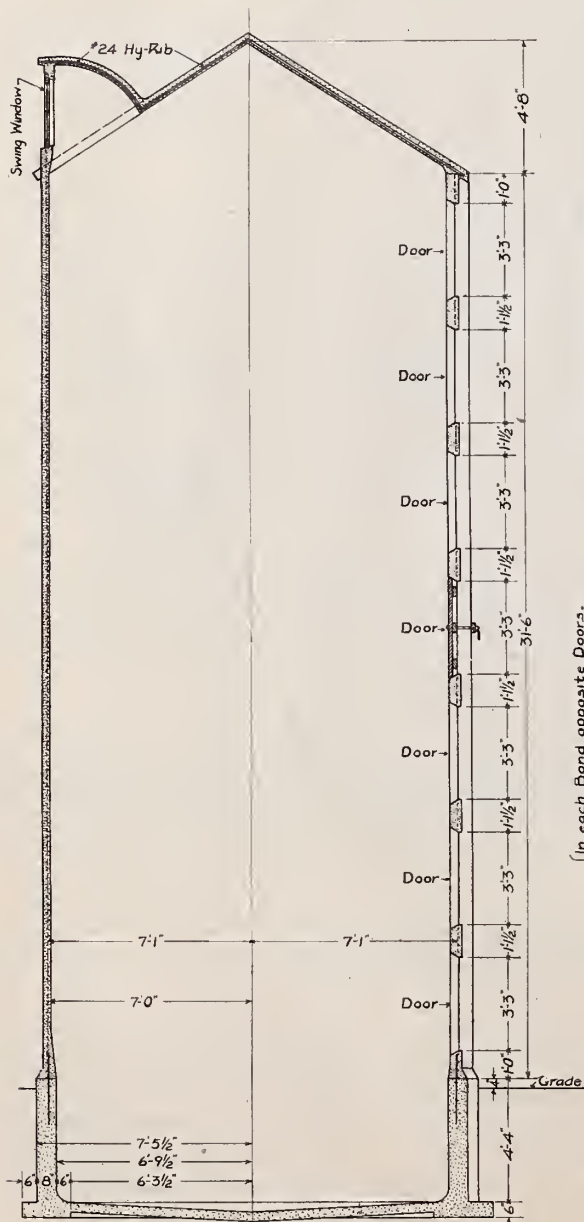
-DETROIT MICH.-



Waterproof the last  $\frac{3}{4}$  inch of inside and outside of wall and top of roof with Trus-Con Waterproofing Paste

BILL OF MATERIAL FURNISHED BY T.C.S. CO.

No	Size	Length	No	Size	Style	Length
21	5/8" Rib Bar	9'-0"	2	No 24 Hy-Rib	4 Rib	1'-9"
			1	"	"	2'-5"
19	3/8" Rib Bar	2'-0"	2	"	"	2'-0"
22	"	2'-6"	2	"	"	3'-4"
2	"	2'-9"	2	"	"	3'-3"
4	"	5'-11"	16	"	"	3'-6 1/4"
12	"	11'-0"	2	"	"	4'-6 3/4"
6	"	24'-0"	16	"	"	6'-2 1/4"
			14	"	"	8'-8 1/2"
320 Lin. Ft. of 7/32" $\phi$ Rod			Curved to 7'-1" Radius			
			28	No 24 Hy-Rib	4 Rib	10'-0"
216 Lbs. Trus-Con W-P. Paste			116	"	"	12'-0"
			Curved like sketch below			
			2	No 24 Hy-Rib	4 Rib	4'-0"
			2	"	"	4'-1"

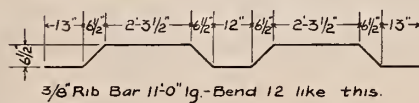
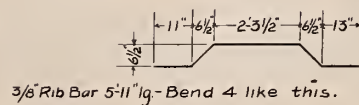
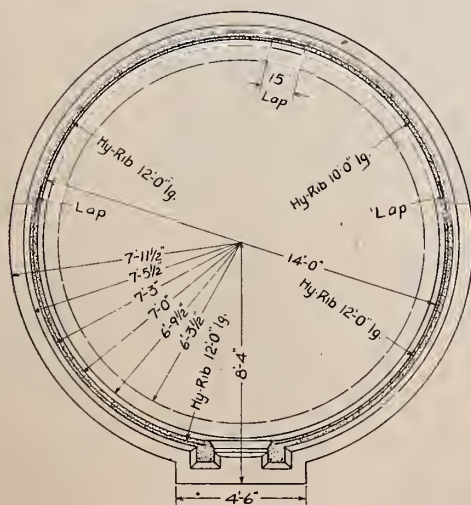
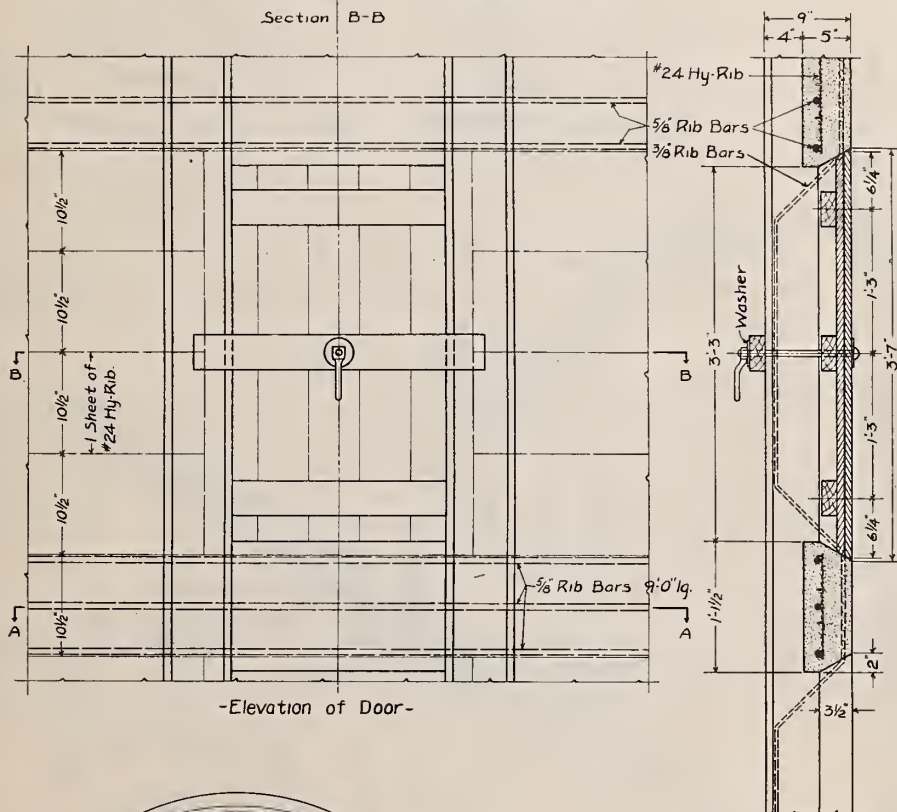
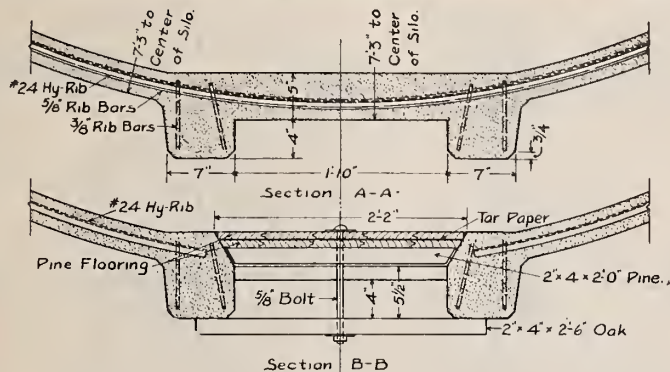


-Section thru Silo-

### SINGLE WALL CONCRETE SILO.

-Elevation of Silo-





-Foundation Plan-

DETAILS OF SINGLE WALL SILO.

The drawing consists of two parts: a side elevation and a plan view of a silo door assembly.

**Side Elevation (Top):**

- Shows a door assembly with a **Swing Window**.
- The door is supported by a **2x4 Side Frame**.
- There are **4 - 7/32 φ Rods** and a **~7/32 φ Rod** indicated.
- A **3/8 Bolt** is shown.
- Dimensions include **1-1/2"** for the door thickness and **1-1/2"** for the frame width.

**Plan View (Bottom):**

- Shows the door's position relative to the **Center of Silo**, with a dimension of **7'-3"**.
- The door is divided into two sections, each labeled **1 Sheet of #24 Hy-Rib 4'-0" lg.**
- The door is secured with **7/32 φ Rod**.
- Dimensions for the door sections are **10 1/2"** and **10 1/2"**.

Technical drawing of a window assembly showing dimensions and components. The drawing includes the following labels and dimensions:

- Top dimensions:  $4\frac{1}{4}"$ ,  $1'-5\frac{1}{2}"$ ,  $3'-7\frac{1}{2}"$ ,  $1'-11\frac{1}{2}"$ ,  $2\frac{1}{2}"$ ,  $5\frac{3}{4}"$
- Left vertical dimension:  $\frac{1}{2}"$
- Central glass panes:  $10" \times 12"$  Gloss.
- Frame width:  $4"$
- Frame thickness:  $\frac{1}{2}"$
- Bottom dimension:  $1'-1\frac{1}{2}"$
- Right vertical dimension:  $7\frac{1}{2}"$  Rod

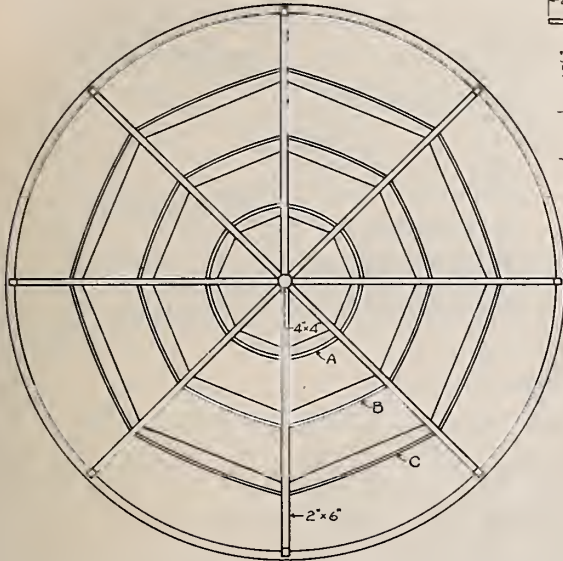
[illegible]

**Roof Truss Components:**

- Top Chord:** Labeled "Side wall Hy-Rib cut to fit on job." Dimensions include  $\frac{7}{32} \phi$  Rod,  $1\frac{1}{2}$ ,  $1\frac{1}{6}$ ,  $1\frac{1}{6}$ ,  $1\frac{1}{6}$ , and  $1\frac{1}{6}$ .
- Vertical Support:** Labeled "Wire Hy-Rib well together at all splices."
- Truss Members:**
  - Top chord members:  $1\frac{1}{2}$ ,  $1\frac{1}{6}$ ,  $1\frac{1}{6}$ ,  $1\frac{1}{6}$ ,  $1\frac{1}{6}$ .
  - Internal vertical members:  $2\frac{1}{2}$ ,  $2\frac{1}{2}$ ,  $2\frac{1}{2}$ ,  $2\frac{1}{2}$ ,  $2\frac{1}{2}$ .
  - Bottom chord members:  $1\frac{1}{2}$ ,  $1\frac{1}{6}$ ,  $1\frac{1}{6}$ ,  $1\frac{1}{6}$ ,  $1\frac{1}{6}$ .
- Dormer Opening:** A rectangular opening in the center of the truss.
- Labels and Notes:**
  - "These  $\frac{7}{32} \phi$  Rods around Roof with  $12''$  lap. Wire well to Hy-Rib."
  - "Wire Hy-Rib well together where Panels meet."
  - "Panels to meet at center of  $2' \times 6'$  centering board."
  - "Cut out Hy-Rib for Dormer opening but cut away only 1 Rib."
  - "Corner Pieces to be cut from scrap pcs of Hy-Rib."
  - " $\frac{1}{8}$  of Roof - 7 Panels like this"
  - " $\frac{1}{8}$  of Roof - 1 Panel like this"

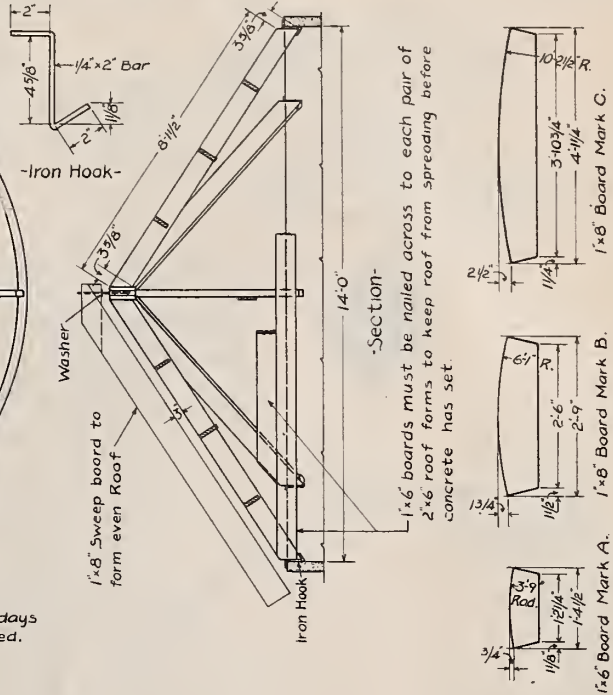
### DETAILS OF SINGLE WALL SILO





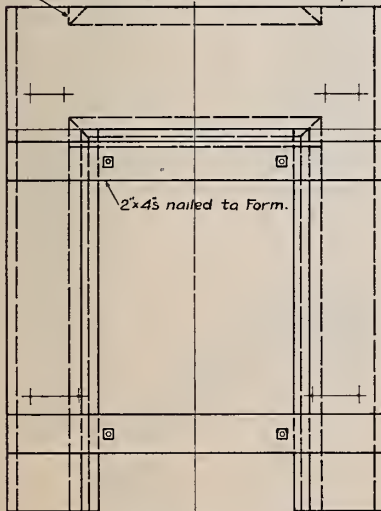
-Plan of Roof Forms-

Forms to support Roof Hy-Rib may be removed from 3 or 4 days after pouring concrete or may be left in place as desired.

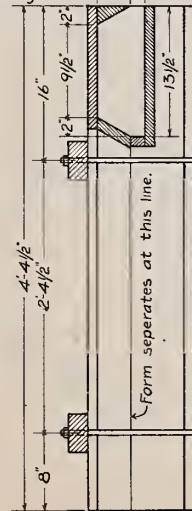


1x6 boards must be nailed across to each pair of 2x6 roof forms to keep roof from spreading before concrete has set.

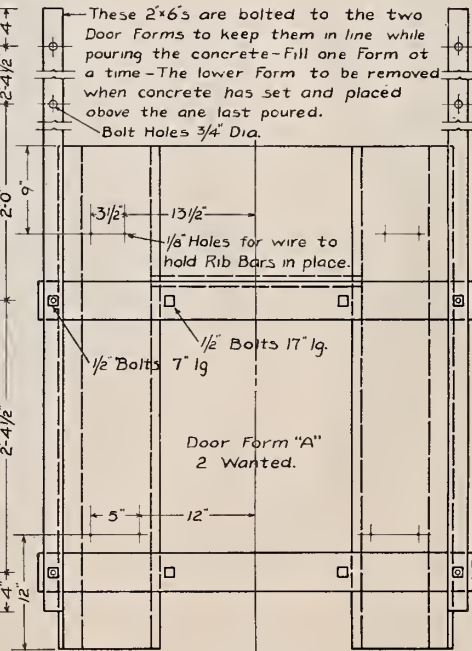
NOTE:-1" and 2" boards to be used in building Forms.  
All surfaces coming in contact with the concrete should be dressed and oiled.  
This 2'x3 1/2" piece to be held in place with screws, when last Form is to be filled remove this piece and fill Form level with last sheet of Hy-Rib.  
Forms to be filled ahead of wall plastering.



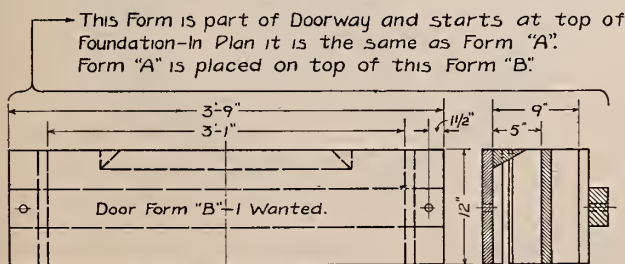
-Rear Elevation-



-Section-

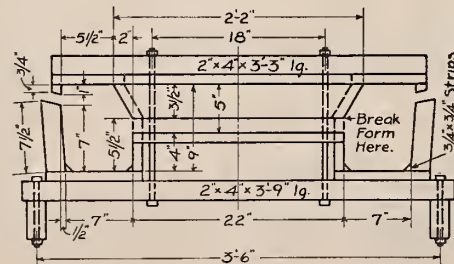


-Front Elevation-



-Rear Elevation-

DETAILS OF SINGLE WALL SILO.



-Plan-



## DOUBLE WALL CONCRETE SILO

-WITH CONTINUOUS DOORS-

REINFORCED WITH

## HY-RIB

-HY-RIB IS SHIPPED BENT TO EXACT CURVE-

-TRUSSED CONCRETE STEEL CO-

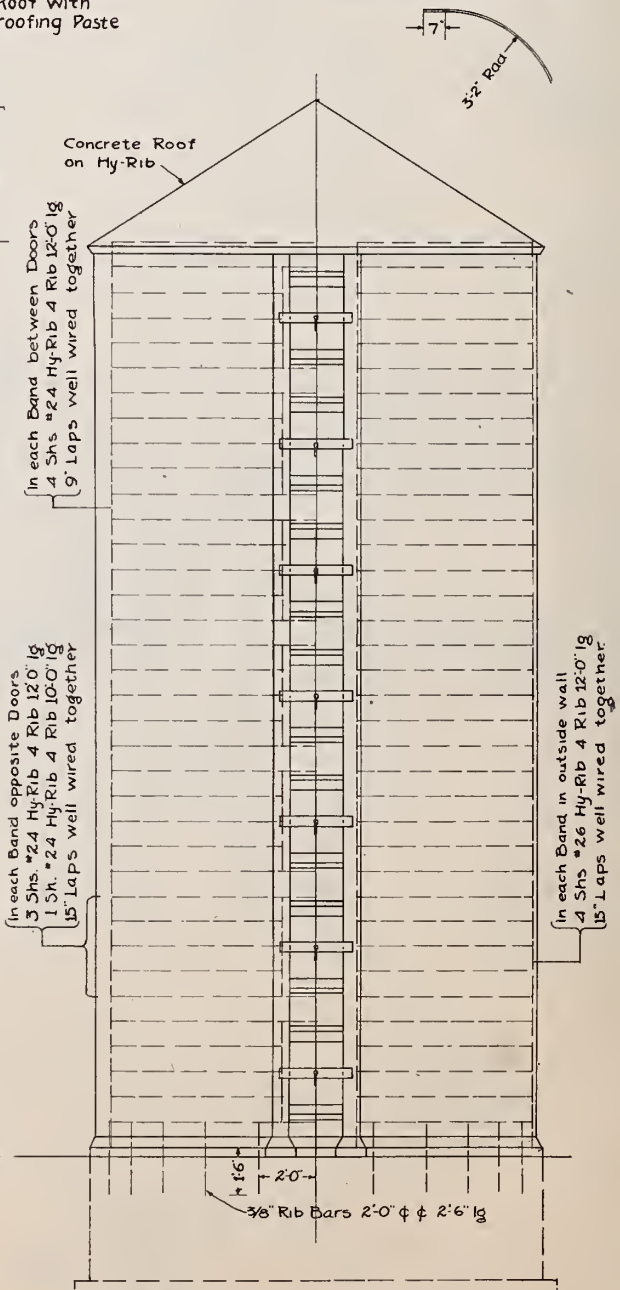
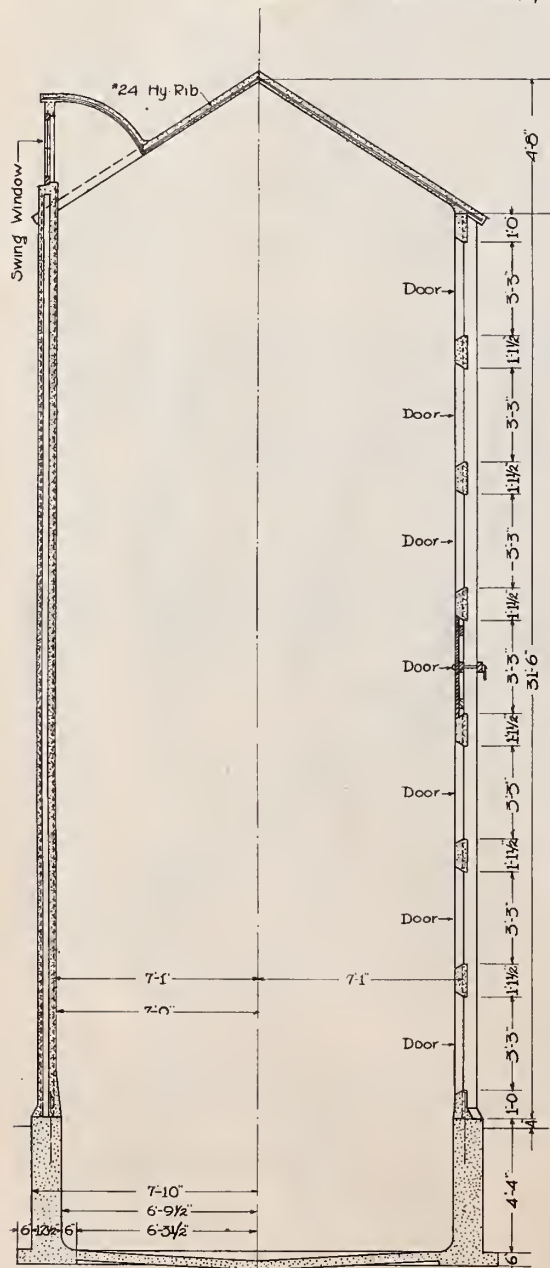
-DETROIT MICH-



Waterproof the last 3/4  
inch of Plaster on the  
inside and outside of  
Silo and top of Roof with  
Trus-Con Waterproofing Paste

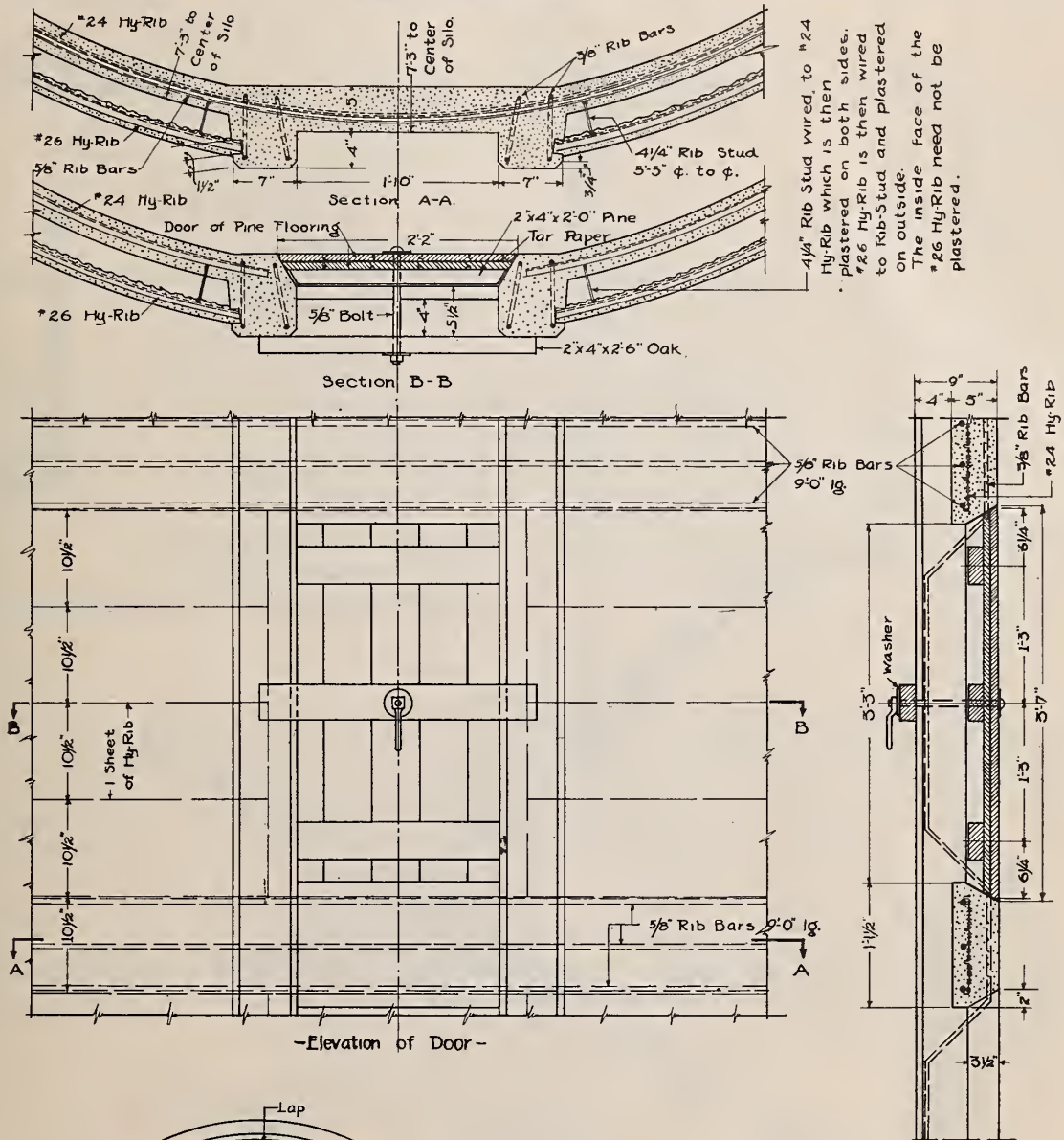
*BILL OF MATERIAL FURNISHED BY T. C. S. CO.*

No.	Size	Length	No.	Size	Style	Length
21	5/8" Rib Bar	9'-0"	2	Nº24 Hy-Rib	4 Rib	2'-0"
19	3/8" Rib Bar	2'-0"	2	"	"	2'-8"
22	"	2'-6"	4	"	"	3'-3 1/2"
2	"	2'-9"	16	"	"	3'-10 1/2"
4	"	5'-11"	2	"	"	4'-10"
12	"	11'-0"	16	"	"	6'-7 1/2"
6	"	24'-0"	14	"	"	9'-2"
Curved to 7'-1" Radius						
			2	Nº24 Hy-Rib	4 Rib	2'-5"
18	1/4" Rib Stud	16'-6"	28	"	"	10'-0"
			116	"	"	12'-0"
Curved to 7'-6" Radius						
340 Lin. Ft. of 7/32" Rod			144	Nº26 Hy-Rib	4 Rib	12'-0"
Curved like sketch below						
224Lbs Trus-Con W-P Paste			2	Nº24 Hy-Rib	4 Rib	4'-2"
			2	"	"	4'-3"



-Section thru Silo- **DOUBLE WALL CONCRETE SILO** -Elevation of Silo-

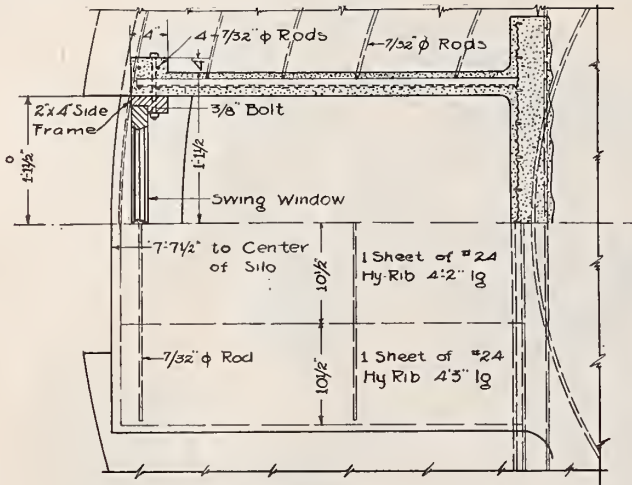




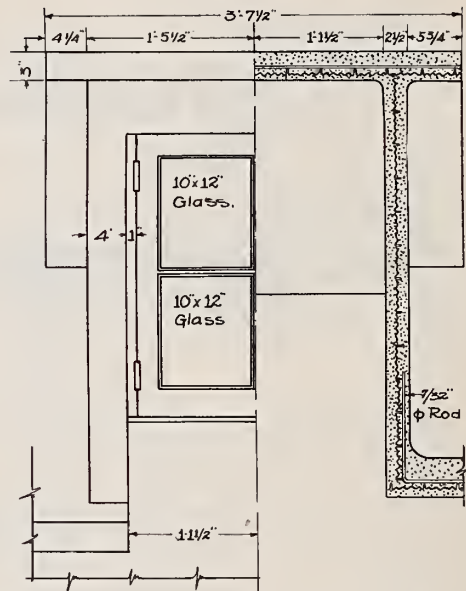
4 1/4" Rib Stud wired to #24 Hy-Rib which is then plastered on both sides. #26 Hy-Rib is then wired to Rib-Stud and plastered on outside. The inside face of the #26 Hy-Rib need not be plastered.

3/8" Rib Bar 5'-11" lg-Bend 4 like this.

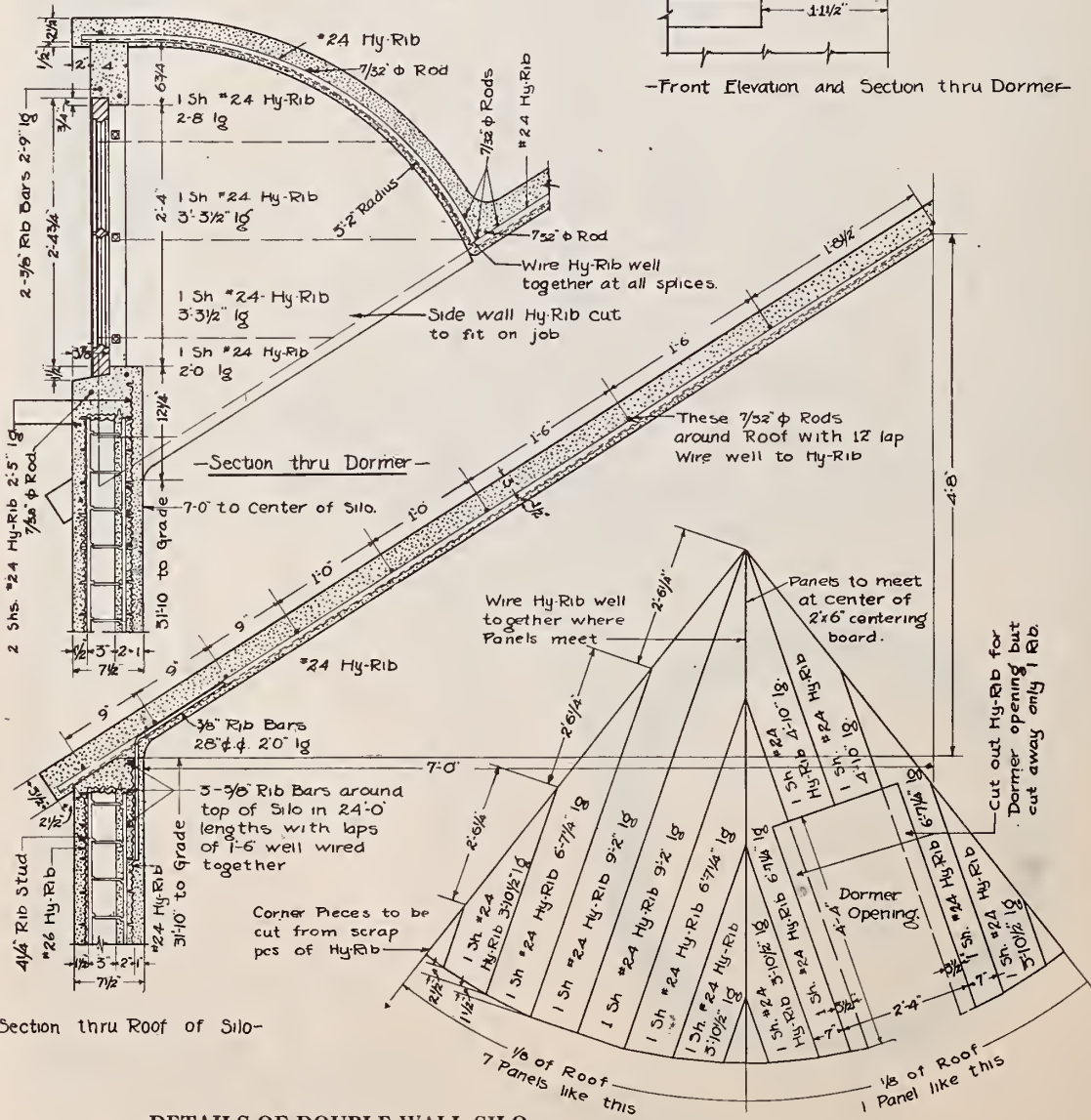
3/8" Rib Bar 11'-0" lg-Bend 12 like this.



-Plan of Roof and Section thru Dormer-



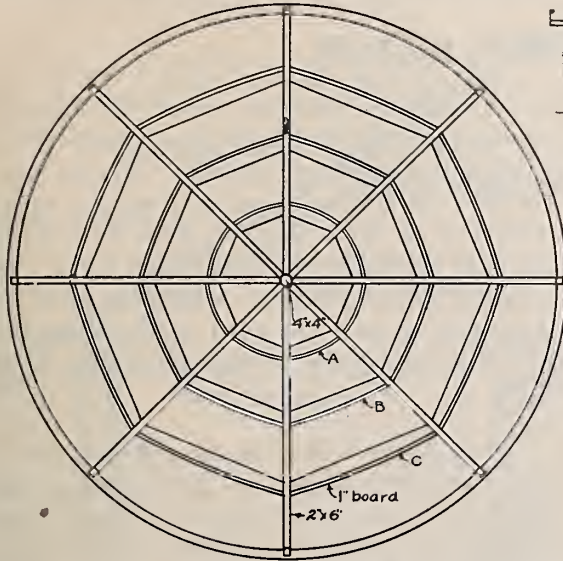
-Front Elevation and Section thru Dormer-



-Section thru Roof of Silo-

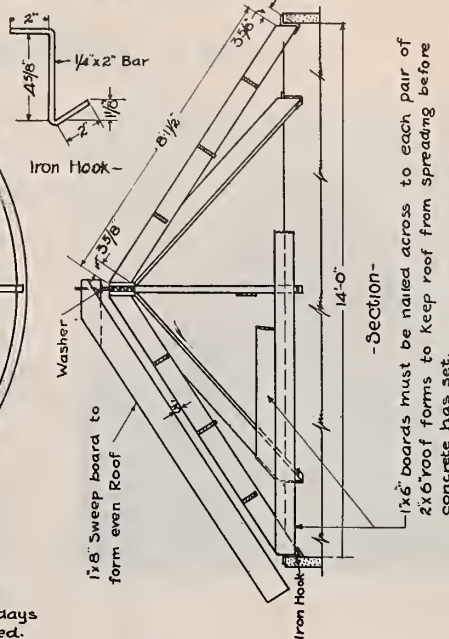
DETAILS OF DOUBLE WALL SILO.





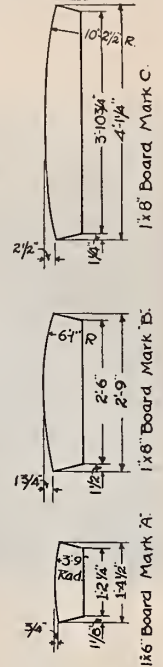
- Plan of Roof Forms -

Forms to support Roof Hy-Rib may be removed from 3 or 4 days after pouring concrete or may be left in place as desired.

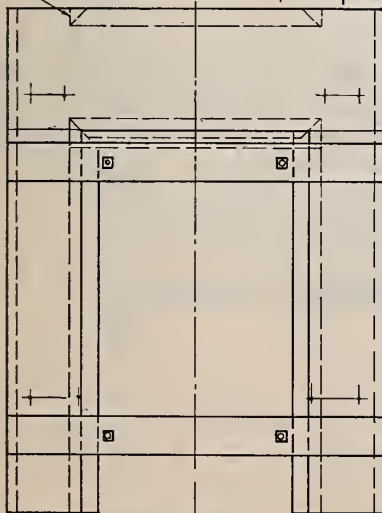


- Section -

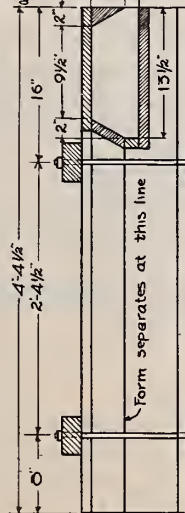
1x6 boards must be nailed across to each pair of 2x6 roof forms to keep roof from spreading before concrete has set.



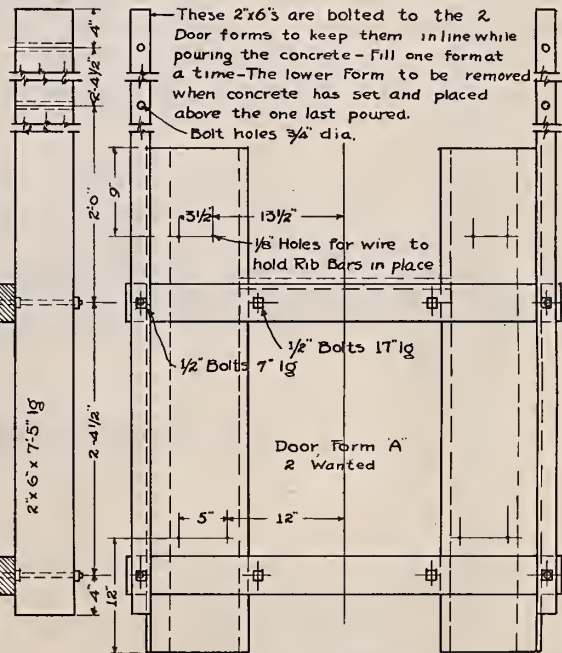
NOTE: - 1" and 2" boards to be used in building Forms  
All surfaces coming in contact with the concrete should be dressed and oiled  
This 2x3 1/2" piece to be held in place with screws when last Form is to be filled remove this piece and fill Form level with last sheet of Hy-Rib  
Forms to be filled ahead of wall plastering.



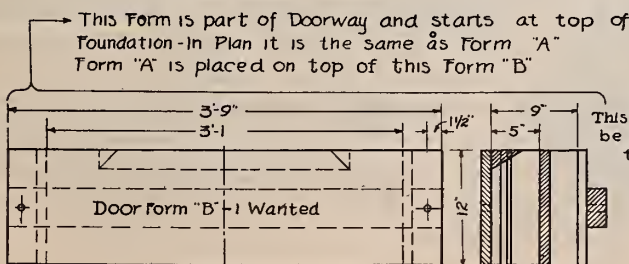
- Rear Elevation



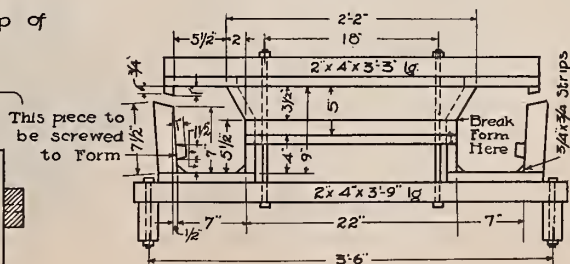
- Section -



- Front Elevation -



- Rear Elevation -



Plan

DETAILS OF DOUBLE WALL SILO



## HY-RIB CONCRETE MILKHOUSE



Water Cooling Tank

A sanitary milkhouse which will meet the requirements of City Health Departments should necessarily be built of concrete. By the use of Hy-Rib, covered with cement mortar, such a milkhouse is less expensive than the ordinary one built of masonry walls and wood floors. The concrete ensures absolute cleanliness, while it is impossible to keep the wood floors and walls in this condition owing to their absorption of the milk.

The design which we have shown gives in detail a strictly modern, model milkhouse, easily built and at low cost. The walls consist of wood studding with Hy-Rib and Rib Lath and cement plaster, as described under "How to Build Concrete Walls," page 8.

The roof is built of Hy-Rib supported by wood joists and covered with concrete and plastered underneath. The Ceiling is made up of Rib Lath attached to the underside of the joists and plastered with cement mortar. The interior thus has a complete cement finish, which can be made even more dampproof by coating walls and ceilings with Trus-Con Interior Wall Finish and the floors with Trus-Con Floor Enamel. The roof should be covered with some good, standard roofing or weatherproofing.

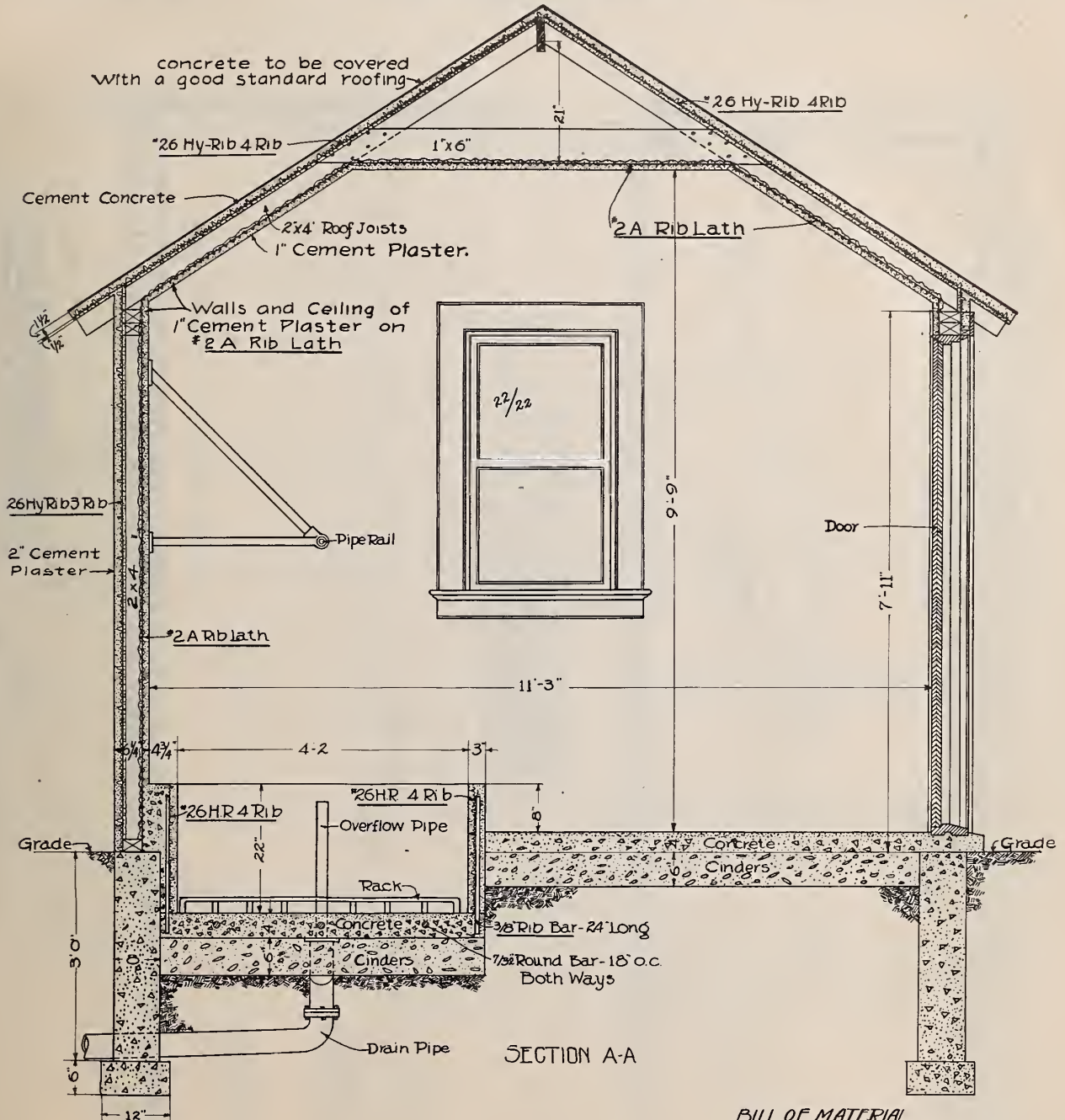
The water cooling tanks in the interior are constructed of Hy-Rib held in place by Rib Bars and plastered on both sides with cement mortar. An iron grating is placed in the bottom of the tank to allow free circulation of cool water around and under the milk cans. Provision should be made for inlet and outlet pipes. The pipe rail attached to the wall above the tank provides a convenient purchase in lifting heavy cans from the tank. Overflow pipes of desired heights are provided.

## HY-RIB CONCRETE ICE HOUSES

(Pages 53 to 55.)

The first requirement in a properly constructed ice house is that the walls and roofs should provide a maximum insulation against heat. On the two designs we are showing, this is very well taken care of by the use of Hy-Rib wall construction. The inner wall is covered with a thickness of tarred paper and the Hy-Rib is attached to the studs and plastered with waterproofed cement mortar. Ample air space between the cement walls on the inside and outside provides an excellent insulation against heat. Similarly the concrete walls being solid and monolithic prevent any hot air currents from entering the building. In the roof the Hy-Rib is laid directly on the sloping rafters and concrete applied to the upper side, allowed to set and afterward plastered on the under side. Horizontal joists extend across the building, at the ceiling level, and the Rib Lath for the ceiling is attached to the under side. Above this Rib Lath a layer of tar paper may be used for additional insulation. Ventilators should be placed in the ceiling to allow warm air to escape. The large air space between the ceiling and the roof gives excellent insulation against the heat of the sun. Small ventilators are provided at either end to insure a flow of air in this ceiling space.





SECTION A-A

## CONCRETE MILK HOUSE

WITH WATER COOLING VATS  
REINFORCED WITH

### HY-RIB & RIB LATH

ON WOOD FRAME

TRUSSED CONCRETE STEEL CO  
DETROIT MICH

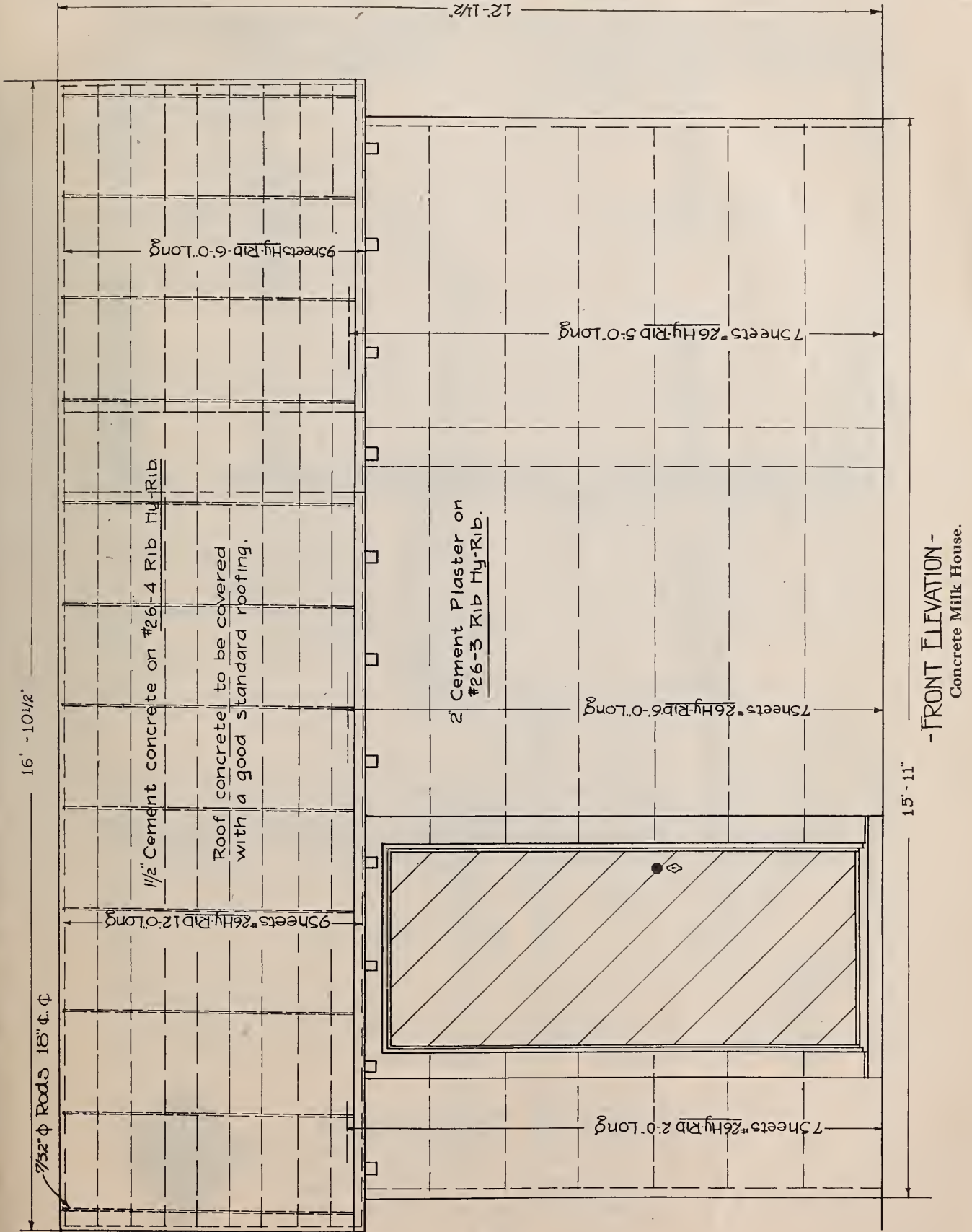


#### BILL OF MATERIAL FURNISHED BY T.C. & CO.

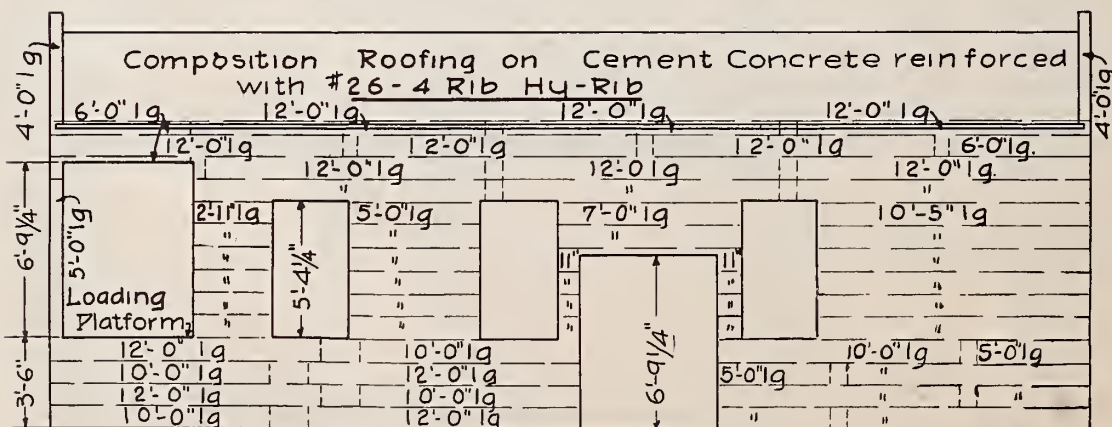
No	Size	Style	Length
6	No 26 Hy Rib	4 Rib	4'-3"
18	"	"	6'-0"
8	"	"	8'-0"
18	"	"	12'-0"
7	No 26 Hy Rib	3 Rib	2'-0"
16	"	"	4'-8"
9	"	"	5'-0"
7	"	"	6'-0"
14	"	"	8'-0"
2	"	"	10'-0"
8	"	"	12'-0"
18	3/8"	Rib Bar	2'-0"
300 Lin. Ft. 1/2" Ø Rod			
12 Sq Yds No 2 A Rib Lath			







— Floor Plan —



Front Elevation.—

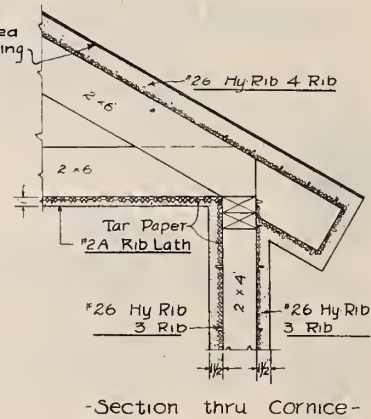
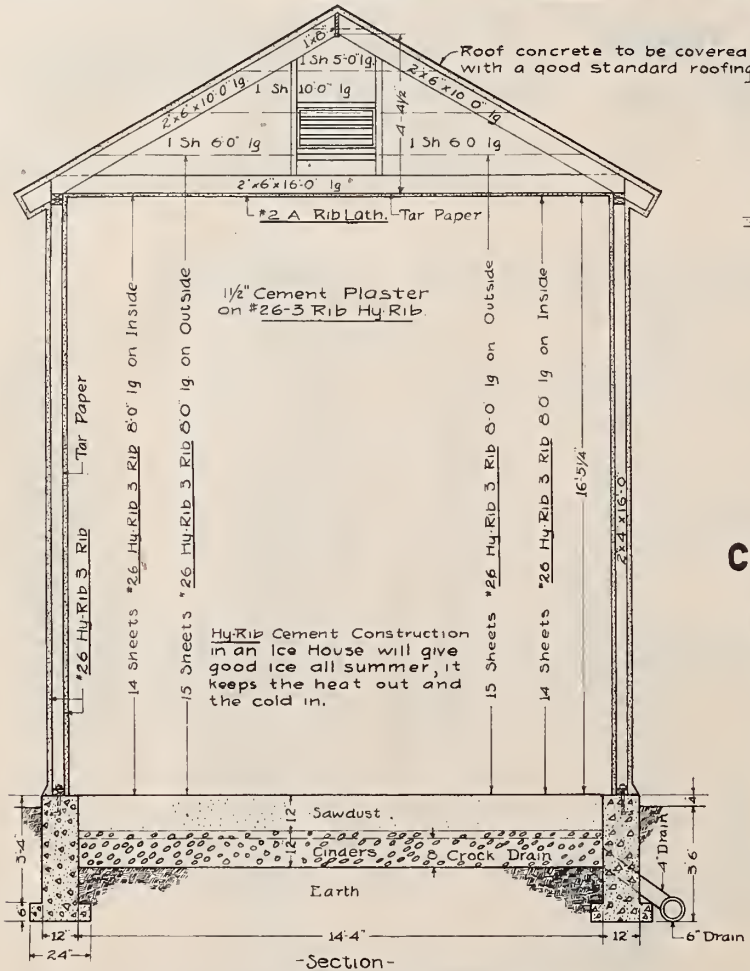
## ELDERON WISCONSIN

## WOOD FRAME - NO FORMS





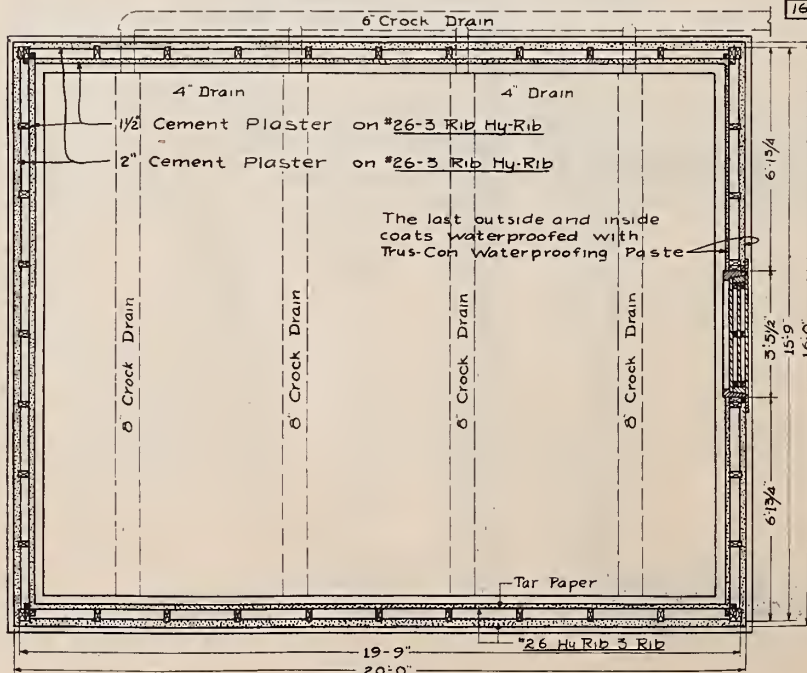




16'0" x 20'0"  
**CONCRETE ICE HOUSE**  
REINFORCED WITH  
**HY-RIB & RIB LATH**  
ON WOOD FRAME

BILL OF MATERIAL  
FURNISHED BY T.C.S.CO.

No	Size	Style	Length
2	#26 Hy-Rib	3 Rib	5'0"
28	"	"	5'10 1/2"
32	"	"	6'0"
60	"	"	8'0"
114	"	"	10'0"
50	#26 Hy-Rib	4 Rib	5'0"
25	"	"	12'0"
15	7/32"	φ Rod	20'0"
36	Sq Yds.	#2 A Rib Lath	
160 Lbs. Trus-Con W-P Paste			



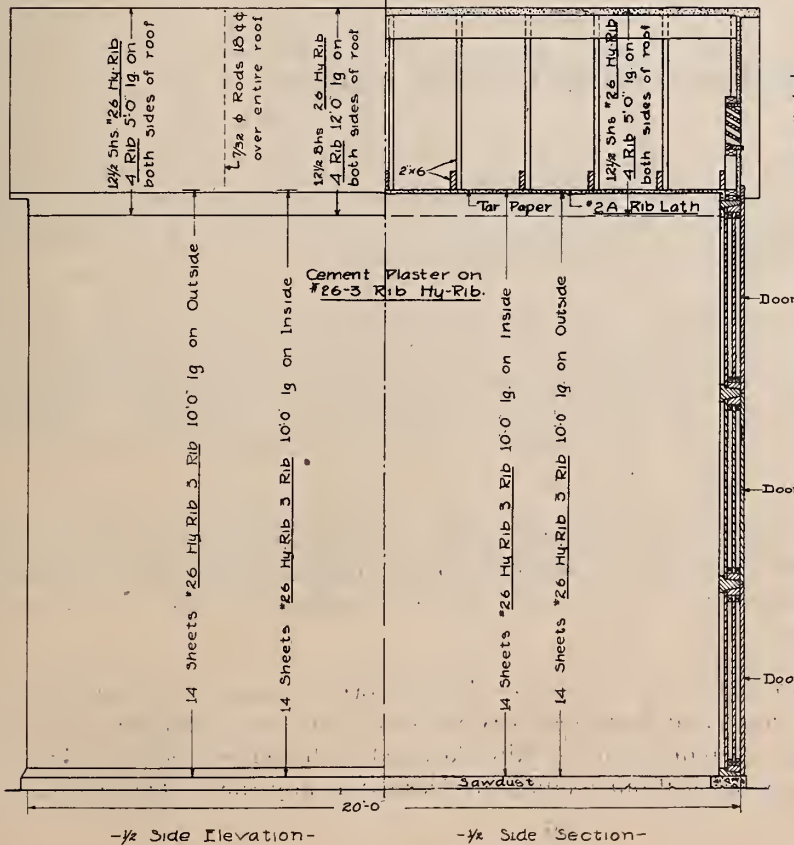
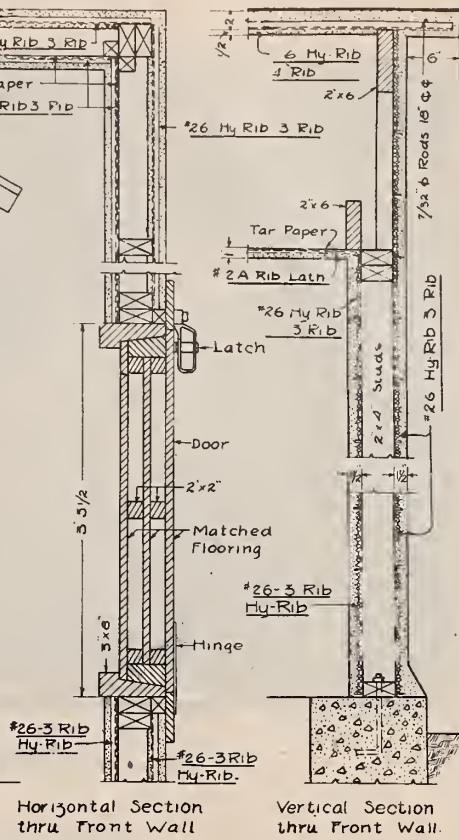
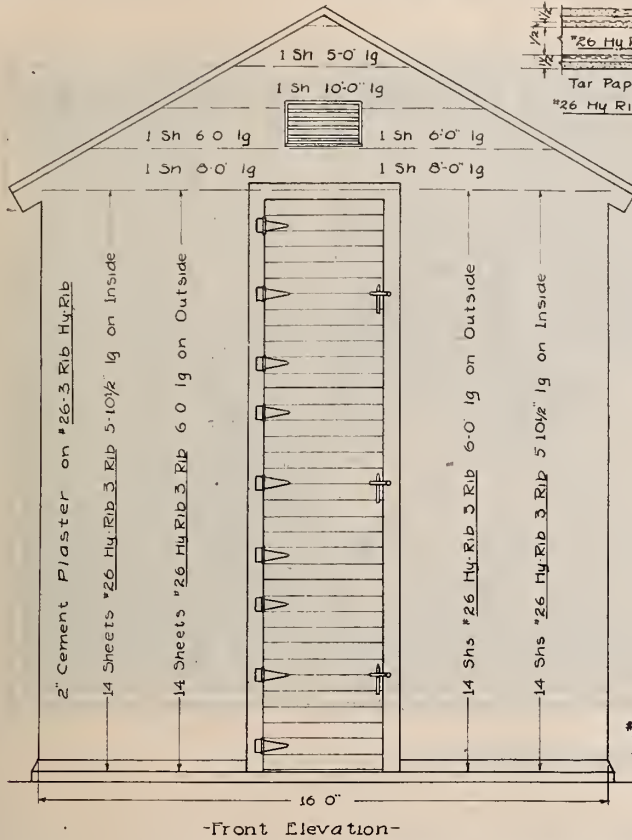
Trus-Con Waterproofing Paste should be used in the last coat to make the walls waterproof.



Foundation Plan

Concrete Ice House—Design No. 2.





Hy-Rib Cement Construction is Fire, Vermin, Moisture, Rust and Rot-Proof and should be used in the construction of all Farm Buildings.





Interior of Hog Barn.

## HY-RIB CONCRETE HOG BARN

The swine breeder of today who wishes best returns knows that he must protect the herd in suitable buildings and not expose them to the cold blasts of winter or the glaring sun of summer. One of the most convenient designs for a hog-house is where the whole herd is sheltered under one roof and where bedding, feed, water, etc., are conveniently located.

The design for a concrete hog-house we are showing is the best of its type and can be erected quickly and inexpensively. The use of concrete, inside and out, assures absolute cleanliness, fireproofness and permanence to the building, besides being very strong and rigid. The general type of construction for walls, page 8, and roofs, page 10, is adopted in the building of a hog-house. Wood studs and wood joists are used as a framework and Hy-Rib and Rib Lath covered with cement mortar on the entire exterior and interior.

The building is thirty feet inside with an eight-foot alley running lengthwise between two rows of pens each 11 feet deep by 10 feet wide. The building extends lengthwise east and west with windows facing the south side. This admits the greatest amount of sunlight into the pens keeping the buildings warm, dry and sanitary.

The floor is of concrete with cement finish. Removable platforms of wood are placed in the corner of each pen for sleeping. Doors and partitions between pens and passageways are of iron pipe with wire netting. All troughs are built with Hy-Rib plastered with cement mortar. The entire building is of concrete and can be washed out readily and cleaned at any time. The coating of the





floors and walls with Trus-Con Floor Enamel and Trus-Con Wall Finishes absolutely dampproofs the concrete and also gives a particularly hard surface to the cement. Feed bins are built of Hy-Rib plastered on both sides with cement mortar. Office walls are of No. 2-A Rib Lath built on wood studs and plastered.

Refer to General Specifications page 8 for building the walls and to page 10 for roofs. By using Hy-Rib in building the hog-house, no centering or false work is necessary. Hy-Rib provides a complete, sanitary, permanent, fireproof construction which can be readily built by any good farm mechanic.

Trus-Con Waterproofing Paste is used in the outside finish coat on walls. The roof is properly weatherproofed with a good standard roofing.

Outdoor pens may be built as large as desired and are separated by concrete fences. This fence is built of Hy-Rib plastered with cement mortar, as shown under "General Design for Fences," pages 78 and 79.

## INDIVIDUAL CONCRETE HOG HOUSE

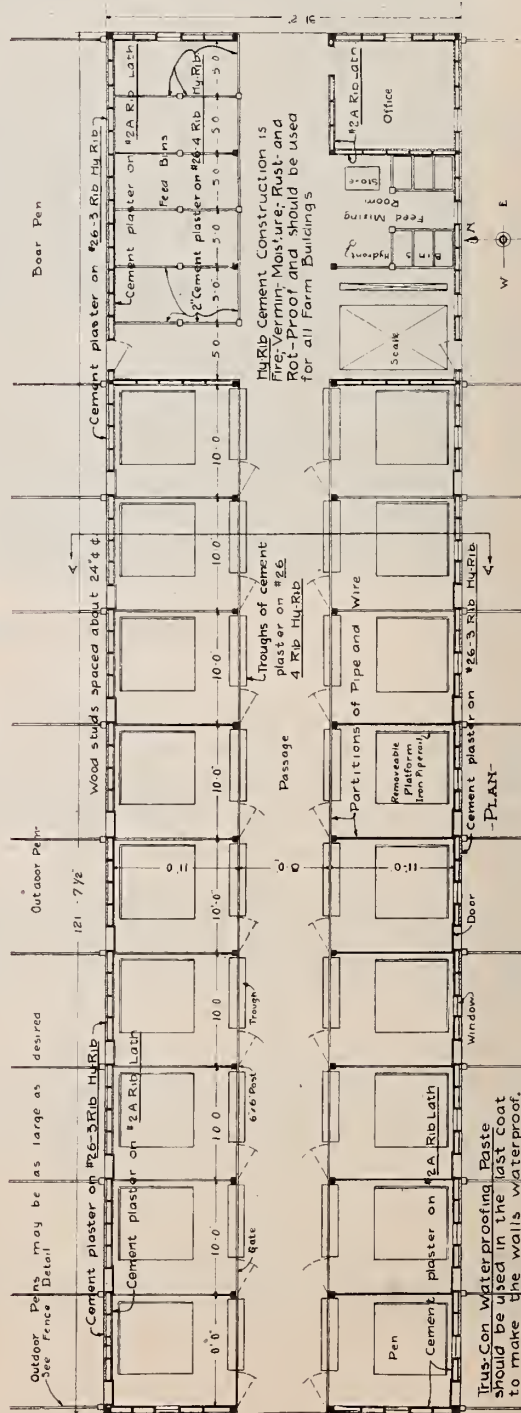
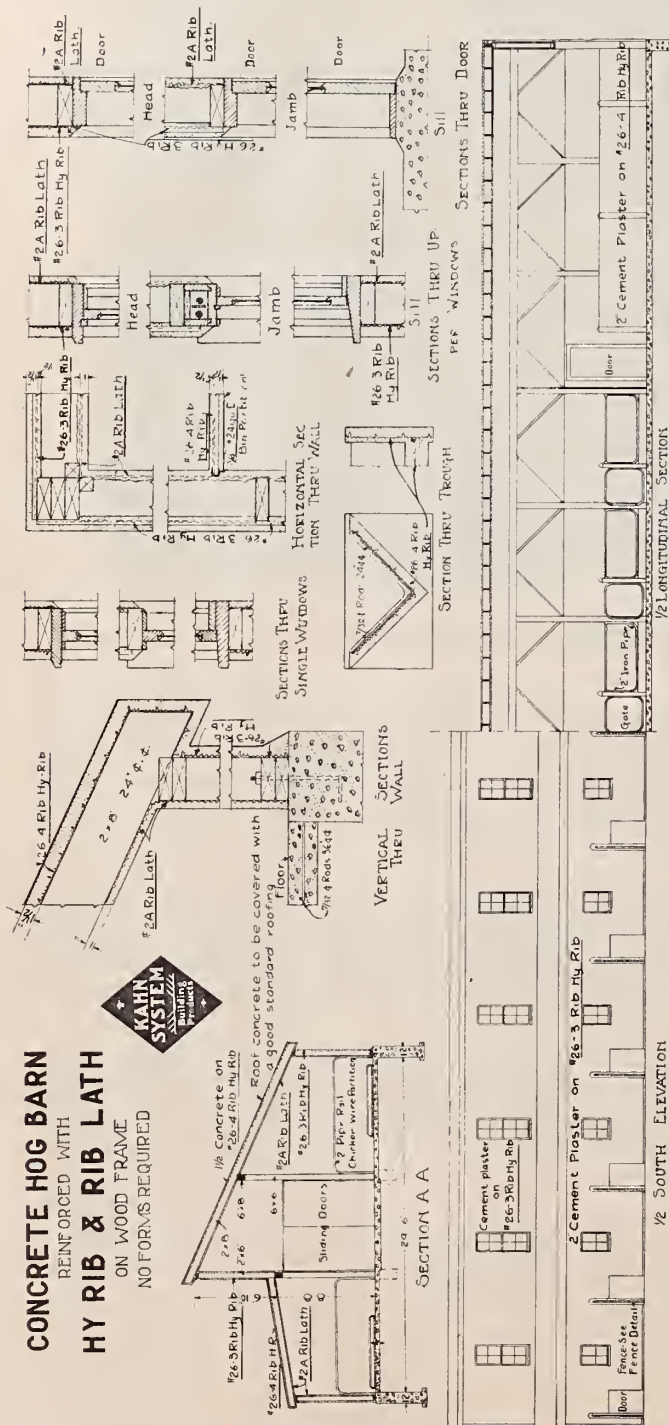
There are some breeders who prefer the outdoor individual house large enough for only one sow and her litter, with a grass lot of at least one-half acre where the sow and pigs may always be by themselves. This plan insures both abundant pasture for the sow and litter as well as plenty of room for the necessary exercise and has the advantage of always affording clean quarters for the pigs and freedom from disturbance for sows farrowing.

In Design No. 1 a square building is shown with two doors, one of which may be used as a ventilator and window, when dropped. A wood frame is covered with No. 26 3-Rib Hy-Rib on the sides and No. 26 4-Rib Hy-Rib on the roof. 1 ½ inches of concrete are applied on outside and one-half inch backplastered on inside between studs. A wood floor is used on account of warmth.

In design No. 2 the side walls of the "A" frame act as a roof. A door and window are in each end and may be left open in summer. Sides of the wood frame are covered with No. 26 3-Rib Hy-Rib plastered with 1 ½ inches of concrete, and backplastered on inside one-half inch thick between studs. A wood floor is used on account of warmth.

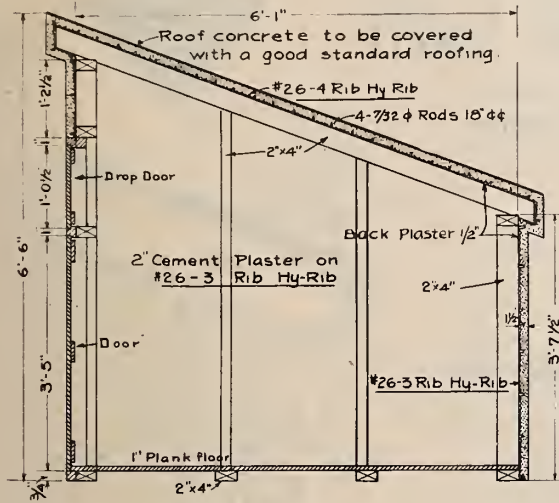
In either house No. 2-A Rib Lath may be placed on inside of studs and plastered 1-inch thick to give complete cement finish inside. Trus-Con Waterproofing Paste will keep out all moisture if added to the water when preparing the finish coat of cement plaster.

**CONCRETE HOG BARN**  
REINFORCED WITH  
**HY RIB & RIB LATH**  
ON WOOD FRAME  
NO FORMS REQUIRED

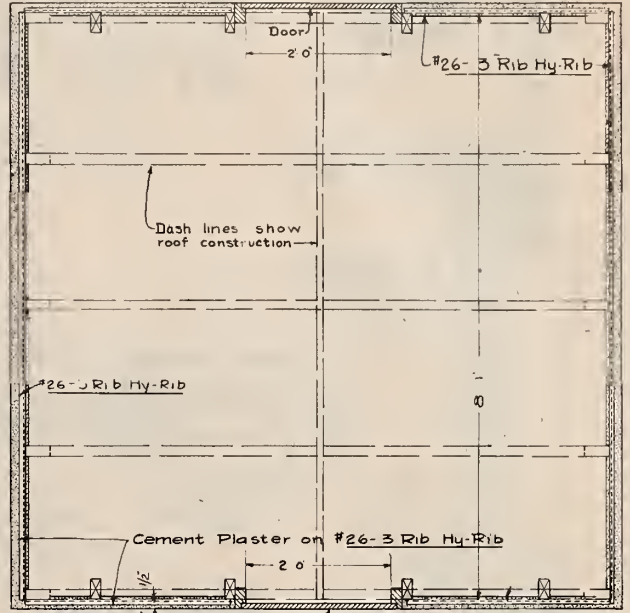


## Concrete Hog Barn.

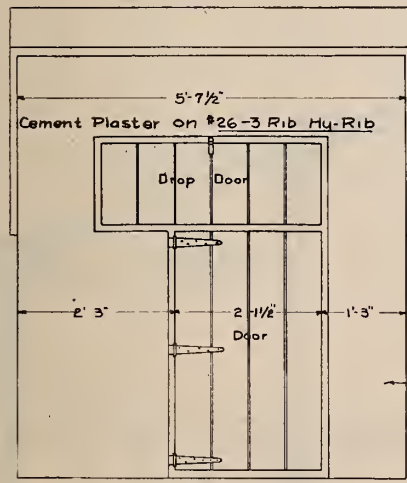




Section  
Hoghouse #1



Plan  
Hoghouse #2



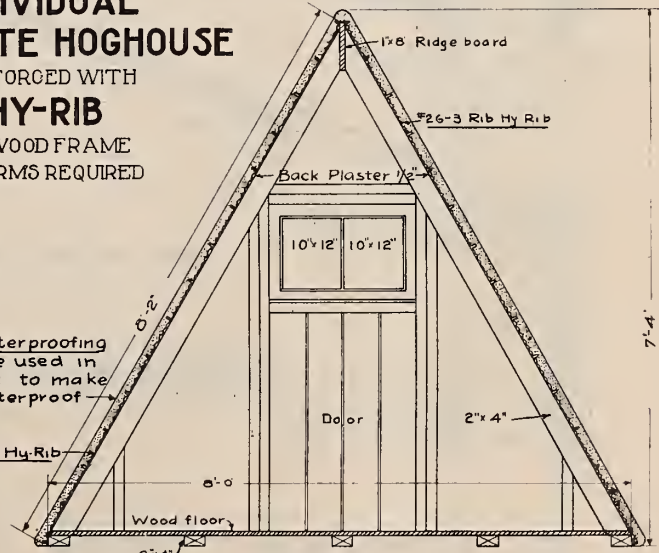
Front Elevation  
Hoghouse No1

**BILL OF MATERIAL  
FURNISHED BY T.C.S. CO.**

No	Size	Style	Length
5	#26 Hy Rib	3 Rib	1'-0"
3	"	"	2'-0"
2	"	"	4'-0"
4	"	"	5'-6"
6	"	"	6'-0"
9	#26 Hy Rib	4 Rib	5'-8"
4	7/32 & Rod		8'-6"

**INDIVIDUAL  
CONCRETE HOGHOUSE**  
REINFORCED WITH  
**HY-RIB**  
ON WOOD FRAME  
NO FORMS REQUIRED

Trus-Con Waterproofing  
Paste shall be used in  
the last coat to make  
the walls waterproof



Section  
Hoghouse No2

**BILL OF MATERIAL  
FURNISHED BY T.C.S. CO.**

No	Size	Style	Length
4	#26 Hy Rib	3 Rib	0'-10"
2	"	"	1'-4"
4	"	"	1'-6"
4	"	"	2'-3"
2	"	"	2'-8"
4	"	"	3'-0"
14	"	"	8'-0"



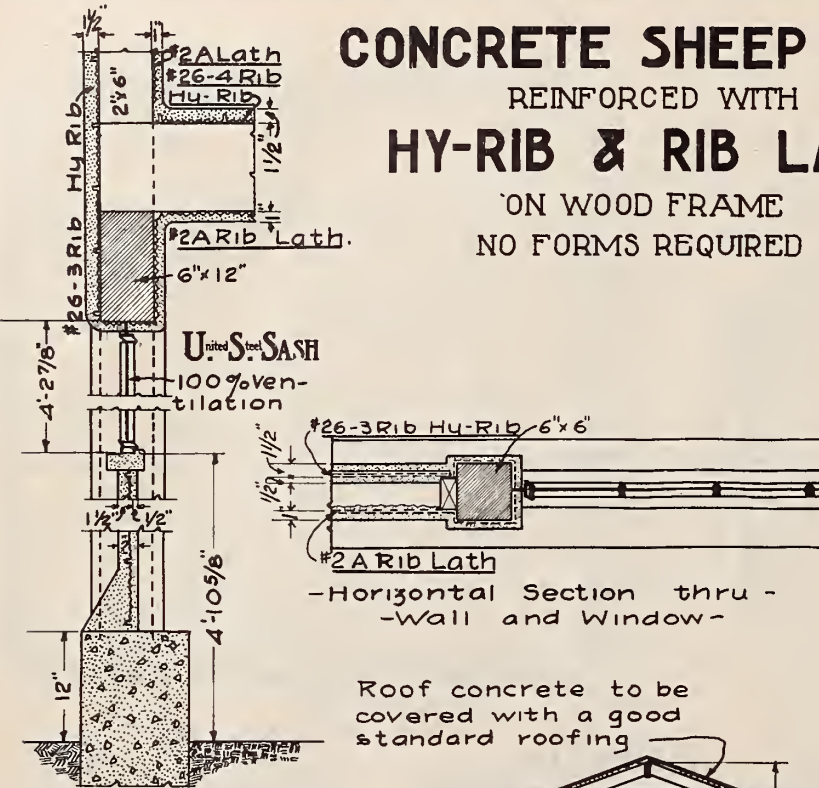
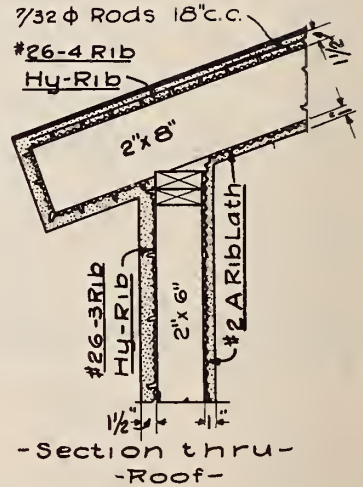
Individual Concrete Hog-Houses.



# CONCRETE SHEEP BARN

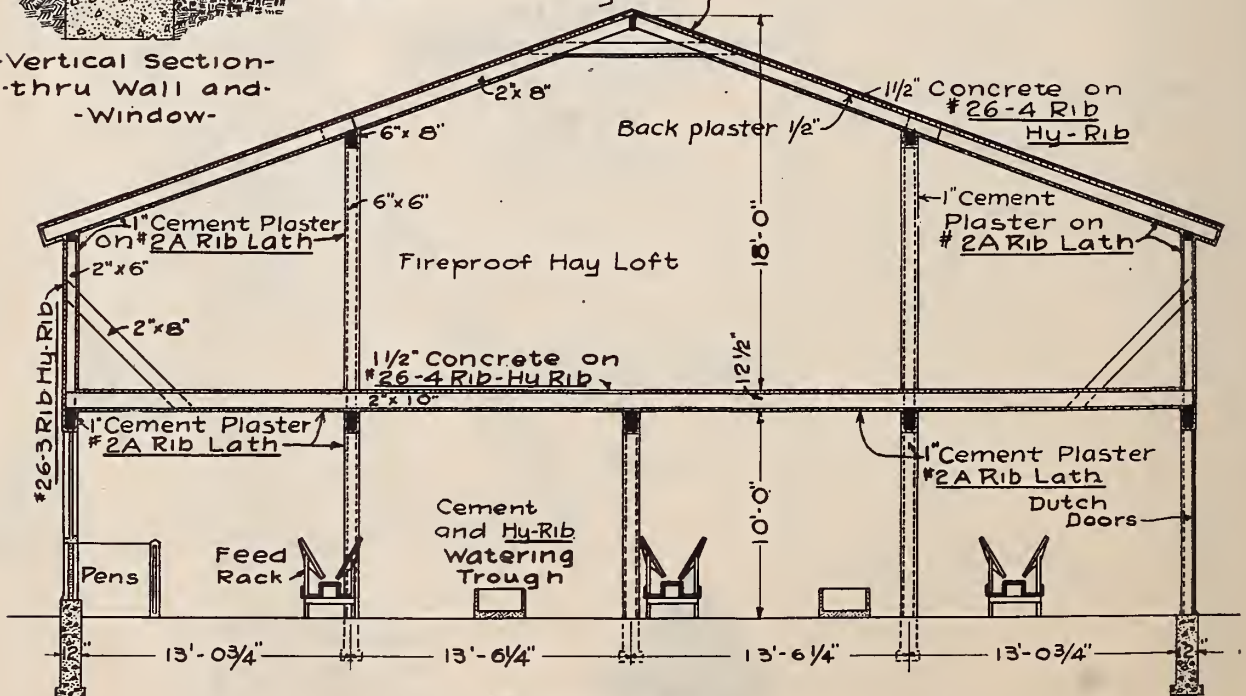
## REINFORCED WITH HY-RIB & RIB LATH

ON WOOD FRAME  
NO FORMS REQUIRED



-Vertical Section thru Wall and Window-

Roof concrete to be covered with a good standard roofing

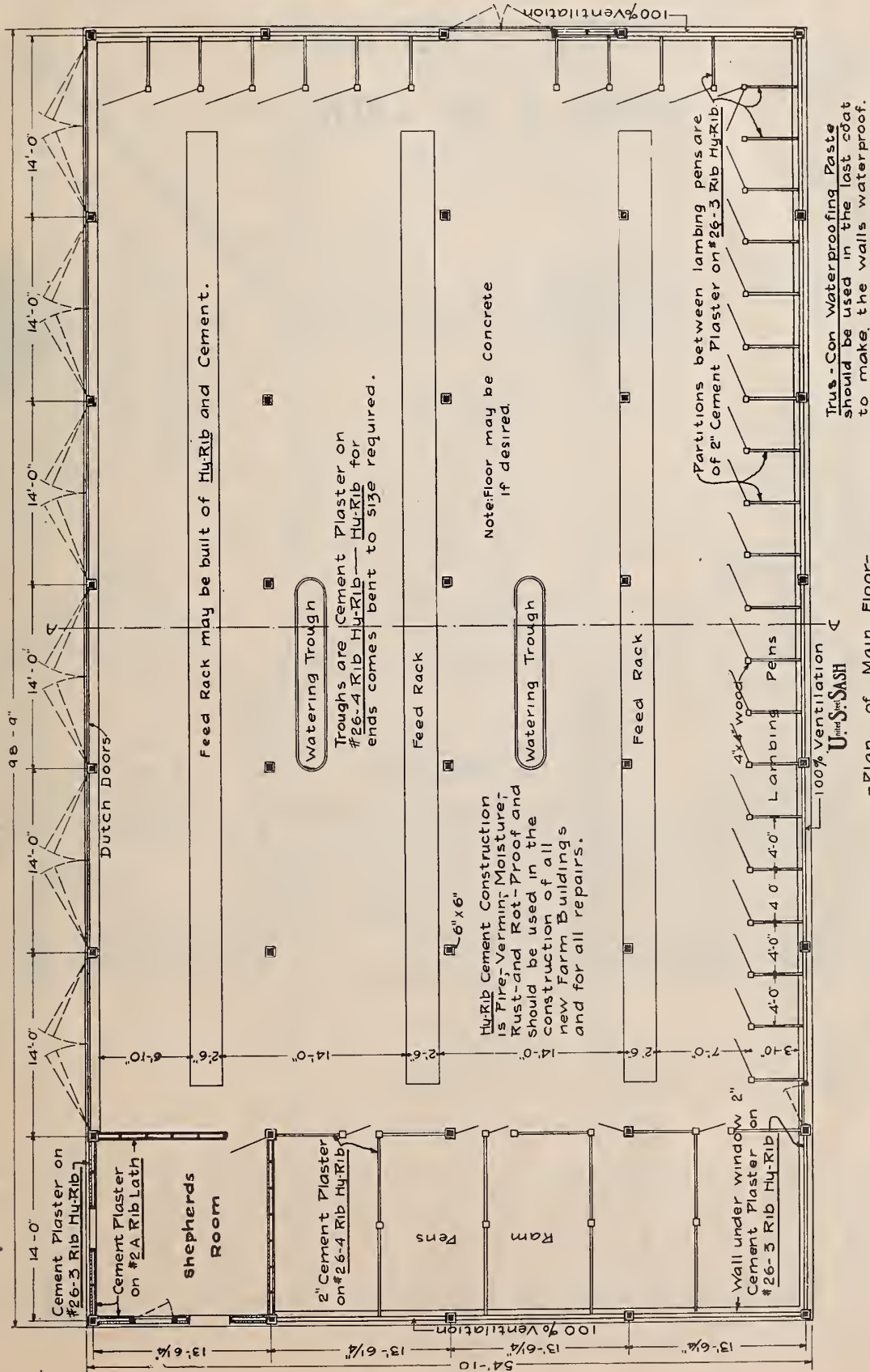


Section A-A  
Concrete Sheep Barn—Design No. 1.

## HY-RIB CONCRETE SHEEP BARN

Sheep should have shelter from the cold, wind and rain and the supply of air should be plentiful. As in the case of the other barns Hy-Rib concrete forms a most suitable construction because it adapts itself readily to the building of walls and roofs, making them fireproof and permanent. The plan of building which we have shown embodies all of the most advanced and practical ideas on barns for housing sheep. All the sides are arranged so as to be thrown practically open, giving a continual flow of fresh air so necessary in order that the sheep may thrive.



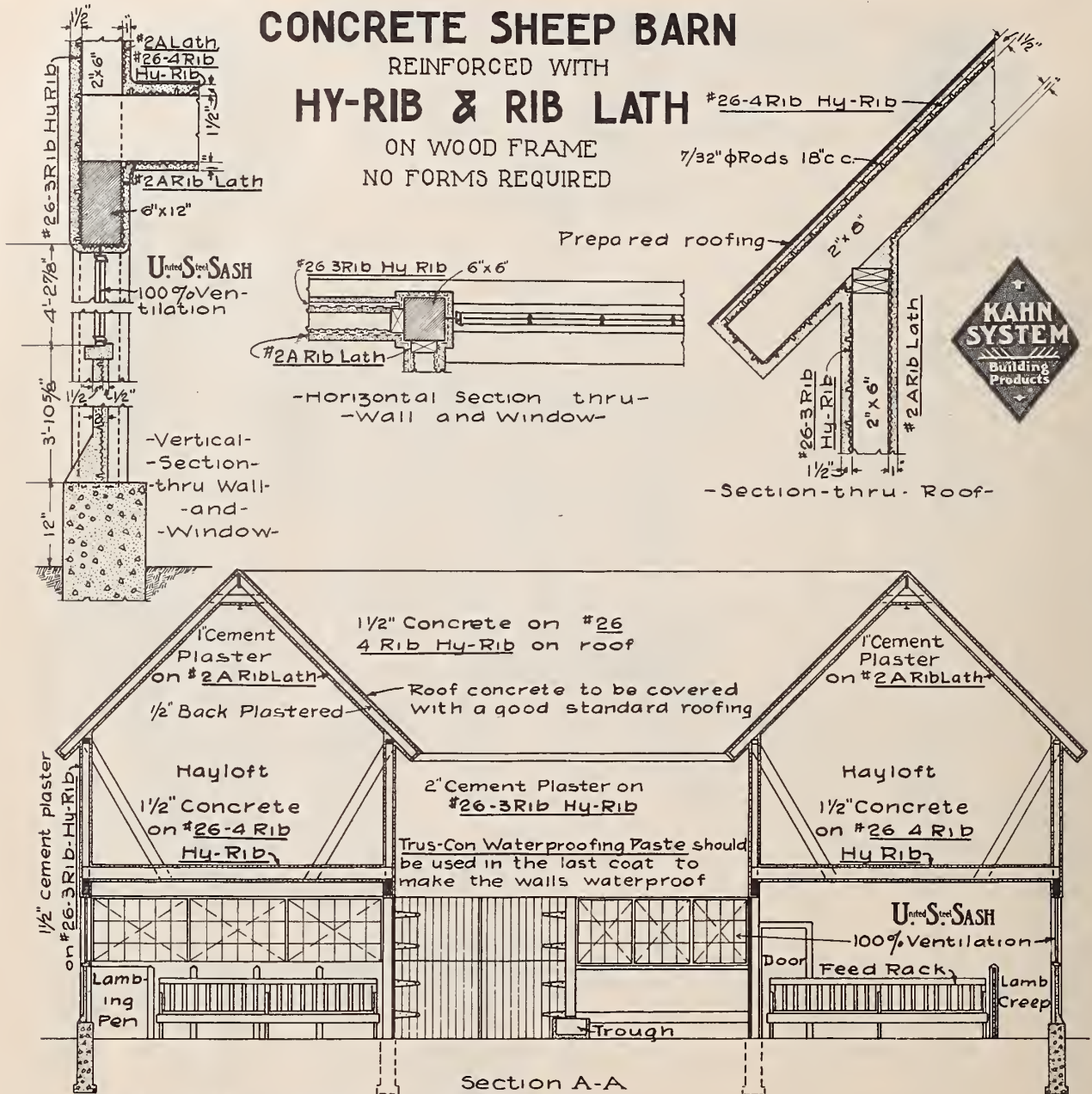


-Plan of Main Floor-  
Concrete Sheep Barn—Design No. 1.



## CONCRETE SHEEP BARN

REINFORCED WITH  
**HY-RIB & RIB LATH**  
ON WOOD FRAME  
NO FORMS REQUIRED



Concrete Sheep Barn—Design No. 2.

We show two designs for sheep barns. The first a covered building 54' 9" x 98' 9". Shepherd's room and ram pens are provided at one end, and lambing pens along the two sides. Watering trough and feed racks are provided as shown. The upper floor is used for storage. Walls, floors and roofs are made of typical Hy-Rib and Rib Lath construction previously described. Partitions and watering troughs are also built with Hy-Rib plastered with cement.

The other building is "U" shaped, with an open court in the center. Feed racks are placed opposite each post and make small compartments into which the sheep may be kept in smaller groups. The doors opening into the court are made of Dutch pattern, so that the top may be left open in good weather. The second floor is used for storage. The general features of the construction are of Hy-Rib and Rib Lath plastered with cement and possess all of the important advantages of being proof against fire, decay, vermin, moisture, etc.



## Concrete Sheep Barn—Design No. 2.

## CONCRETE DIPPING VAT

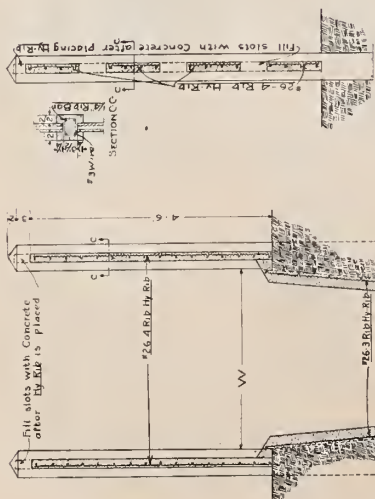
REINFORCED WITH

HY-RIB

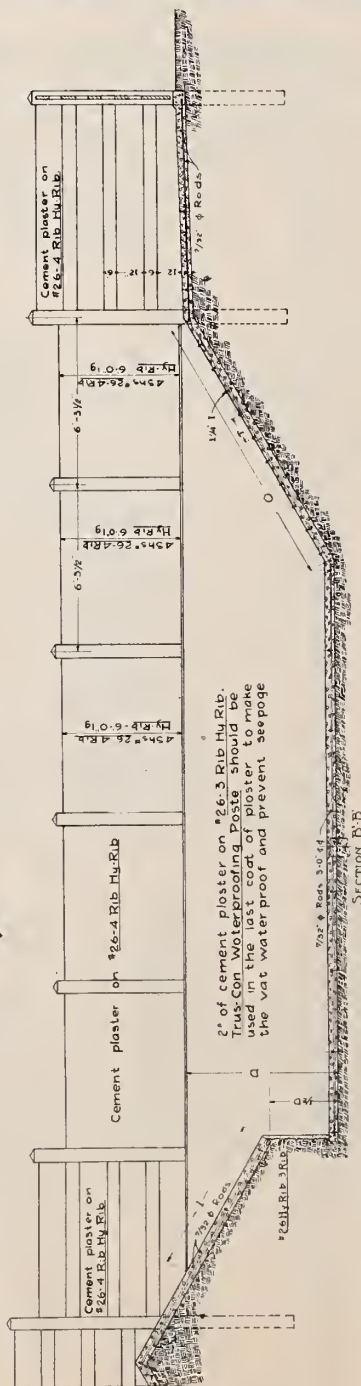
### DIMENSIONS OF GROUND PIT FOR VATS

KIND	DIMENSIONS OF GROND PLAYS									
	W	N	D	L	E	P	A	I	O	T
Horses	5.6	3.4	5.8	5.0	7.6	3.0	4.6	6.0	18.7	1.6
Cattle	5.4	3.4	7.0	5.0	6.8	3.0	13.4	7.0	15.4	1.6
Sheep	3.4	2.4	5.8	4.0	5.0	3.0	10.0	5.0	11.6	1.0
Hogs	3.4	2.4	5.0	3.0	3.0	2.0	10.0	5.0	8.6	1.0

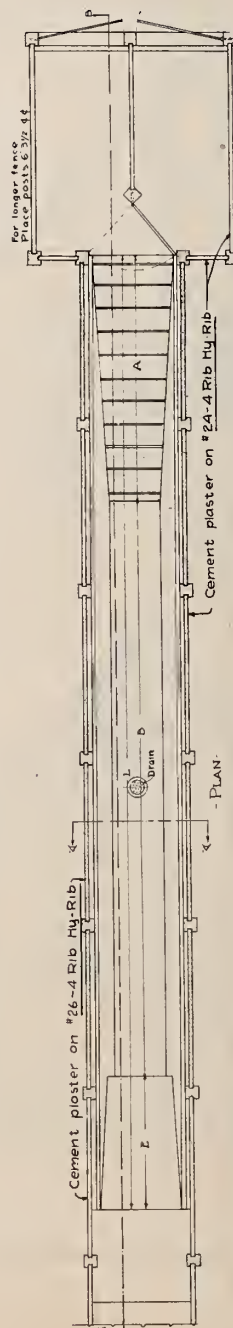
NO FORMS REQUIRED  
EXCEPT FOR POSTS



### DETAIL OF FENCE



SECTION B-B'



Pr. 21.

## Concrete Dipping Vat.





### HY-RIB CONCRETE DIPPING VATS

Dipping vats are now found generally on cattle farms. Dipping animals in the proper chemicals has been found to rid them of ticks, lice, mites, fleas, and as a cure for Texas Fever, lip and leg disease, and scabies. A concrete vat is absolutely permanent and is thoroughly waterproof and moisture proof, so as to prevent the loss of the liquid chemicals which are so expensive. The design of the vat we have shown is along the lines of the recommendation of the best authorities among practical cattlemen. The entering slope is narrow, so that the animal cannot turn around, and is made of a depth sufficient so that the animal will be immersed when he plunges and be compelled to swim the length of the vat. The lengths given will keep the animal in the vat one minute. The floor of the vat is of concrete reinforced as indicated; the walls are built with Hy-Rib placed against the earthen walls and plastered with cement. The Hy-Rib is set with the lath surface away from the wall, so as to give a thorough key and bond for the plaster coat. The  $\frac{3}{4}$ -inch finish coat on the sides and bottom is waterproofed with Trus-Con Waterproofing Paste. A fence is shown enclosing this vat of a design as indicated under "Concrete Fences," pages 78 and 79.

### HY-RIB CONCRETE HEN-HOUSE

A good sanitary concrete hen-house can always be readily kept clean and is always a good investment. The use of Hy-Rib and Rib Lath plastered with cement makes such buildings comparatively inexpensive. The walls in this case are built with studs covered with Hy-Rib on the outside and plastered with cement. In the same way the inside of the studs is covered with Rib Lath and plastered with cement. The roof is built with joists covered with Hy-Rib and concrete above, and Rib Lath and cement plaster below. This gives a complete air-space around the entire hen-house which keeps out the cold and dampness. The floor resting directly on the ground is also built with concrete.



BILL OF MATERIAL FURNISHED BY T.C.S.CO.

No.	Size	Style	Length	No.	Size	Style	Length
Material on Outside				Material for Nests			
34	#26 Hy-Rib	4 Rib	8'-0"	6	#26 Hy-Rib	4 Rib	8'-0"
4	#26 Hy-Rib	3 Rib	1'-0"	11	#26 Hy-Rib	3 Rib	1'-3"
5	"	"	1'-10"	1	"	"	5'-0"
4	"	"	2'-0"	1	"	"	8'-0"
8	"	"	2'-10"	Material for Fresh Air Duct			
1	"	"	3'-0"	1	#26 Hy-Rib	4 Rib	6'-0"
5	"	"	4'-0"	2	"	"	7'-9"
4	"	"	5'-0"	Material for Foul Air Duct			
4	"	"	7'-6"	5	#26 Hy-Rib	4 Rib	6'-0"
18	"	"	8'-0"	3	"	"	8'-0"
3	"	"	12'-0"	Material for Dust Box			
9	7/32" $\phi$ Rod	20'-0"		2	#26 Hy-Rib	4 Rib	2'-7 1/4"
4	7/32" $\phi$ Rod	20'-0"		4	"	"	5'-0"
63	Sq. Yds.	#2A Riblath					

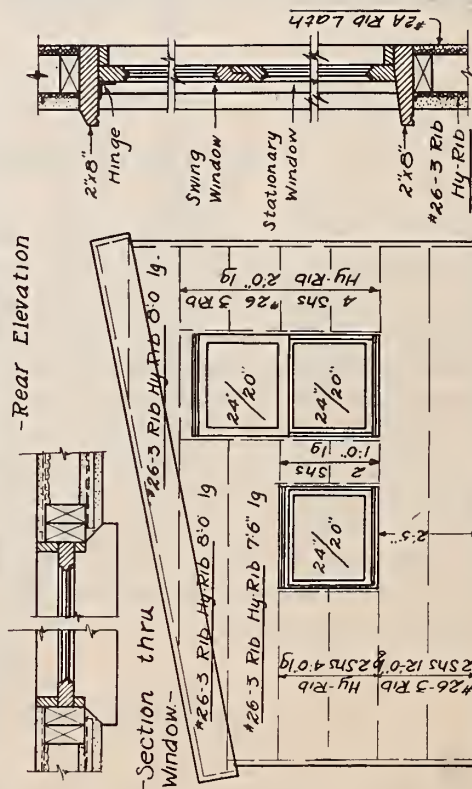
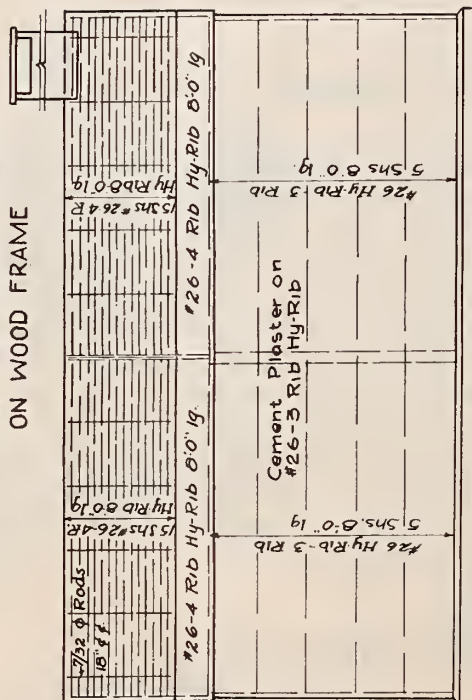
Hy-Rib Cement Construction is Fire, Vermin, Moisture, Rust- and Rot-Proof and should be used for all Farm Buildings.

Trus-Con Waterproofing Paste should be used in the last coat to make the walls waterproof.



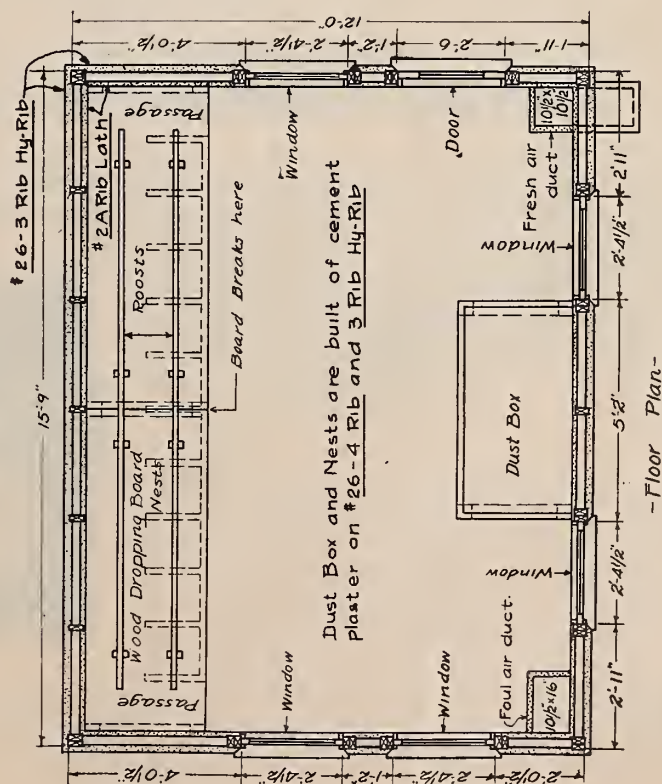
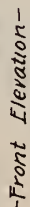
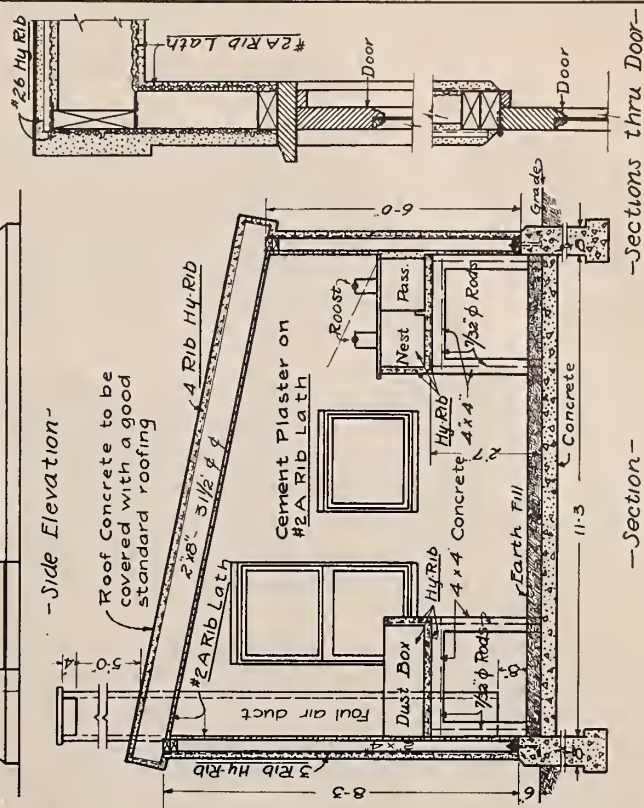
## CONCRETE HEN HOUSE REINFORCED WITH HY-RIB & RIB LATH

ON WOOD FRAME



A hen-house such as this can be washed out with a hose, so that it can always be kept clean and disinfected so as to prevent disease among the fowls. In our design for a hen-house all special features have been given careful consideration. All interior fixtures are portable so as to facilitate cleaning and disinfection. Dropping-boards, perches, nests, dust wallows, are all arranged along the most advanced principles. As will be noted, a number of these fixtures are built with Hy-Rib plastered with cement to carry out the complete sanitary, concrete idea.





## Concrete Hen House.



## HY-RIB CONCRETE ROOT CELLAR

The increasing use of roots as winter feed for animals makes necessary a construction that will be sufficiently warm and dry to keep them from freezing and rotting. Root cellars are ordinarily built below the ground and should be of concrete construction in order to make them moisture-proof and permanent. The floor of this cellar is built of concrete. Place a one-half-inch bolt to anchor the 2x4" sills while the concrete is still wet. The outside frames for walls are built as described for Wall Construction on page 8, using wood studs with Hy-Rib on the outside and Rib Lath on the inner side, both properly coated with cement mortar.

The roof is built of arched Hy-Rib construction, the Hy-Rib being bent to exact curve in our shops. In building these roofs the ends of the Hy-Rib sheets are rested on the walls and two rows of 2x4" temporary wood supports are placed under the Hy-Rib, extending down the length of the building. These temporary supports are used to prevent the deflection of the Hy-Rib until the concrete has properly set. Cover this Hy-Rib with concrete made up of: One part Portland Cement; Two parts sand; Four parts half-inch broken stone or gravel; to the thickness shown on the drawing. When the concrete has set hard these temporary supports may be removed and the under side plastered.

The stairs, as well as the enclosing walls, are also built of concrete, as indicated. Bin walls are built of Hy-Rib, which are merely set in place and plastered with cement mortar, without requiring any studs or centering. In this way a complete, permanent, fireproof, concrete building can be erected at very little cost, and one which will prove exceptionally economical. Similar structures are used for storing vegetables and fruits and as cyclone cellars. They are especially advantageous in housing bees, as such a building should be dry and easily kept warm. Besides being absolutely permanent and fireproof, they are proof against moisture and vermin.

## HY-RIB CONCRETE FRUIT AND VEGETABLE CELLAR

The farmer in the apple and potato districts generally stores away as many barrels of the crop as he has room for and holds them for high prices in the winter or spring. To do this he must have a fruit cellar and one that is dry and sufficiently warm to keep fruit from freezing or rotting. These cellars are usually built below ground and in order to be permanent and moisture-proof should be of concrete. The floor is of cement concrete.



A wood frame is built as shown in the drawing and the outer walls covered with No. 26 3-Rib Hy-Rib and plastered with 1½ inches of cement plaster. After the first coat has set the Hy-Rib should be back plastered ½-inch. The inner walls may be covered with tar paper before the No. 2-A Lath is put on as it will help keep out the heat and cold. The No. 2-A Lath is covered with 1 inch of cement plaster. No. 26 3-Rib Hy-Rib may be used on the inner wall and 1½ inches of plaster put on. This will give a stronger wall and will stand more rough handling of the barrels.





## CONCRETE ROOT CELLAR

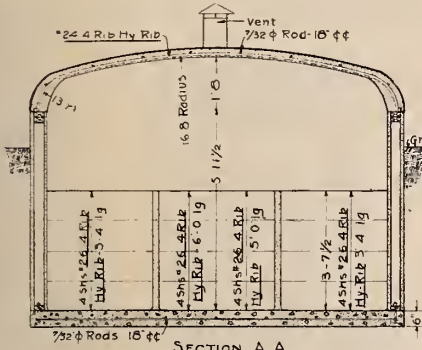
REINFORCED WITH

### HY-RIB & RIB LATH

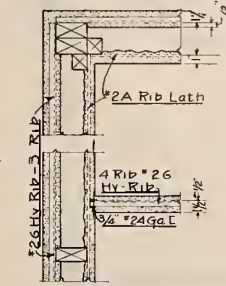
HY-RIB IS SHIPPED BENT TO EXACT CURVE  
NO FORMS REQUIRED



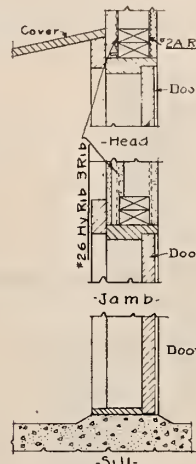
Roof concrete to be covered  
with a good standard  
roofing



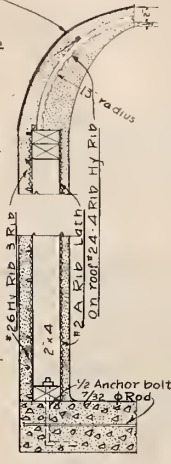
SECTION A A



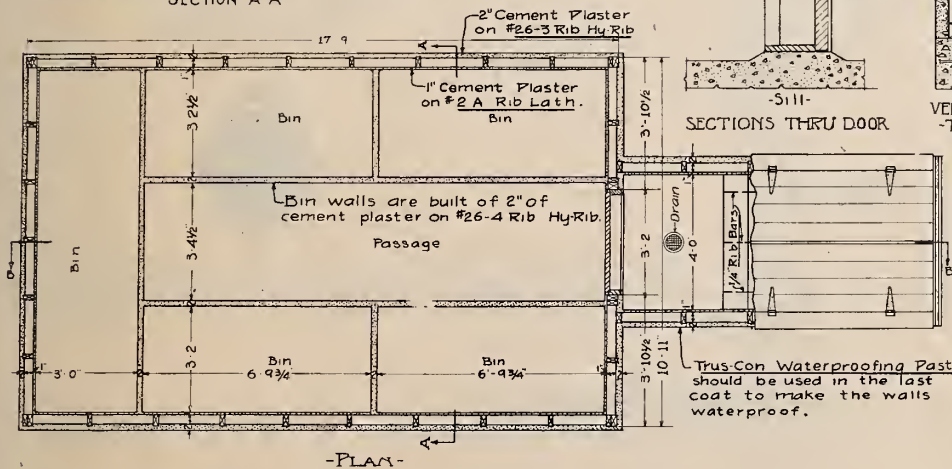
HORIZONTAL SECTION THRU WALL



SECTIONS THRU DOOR



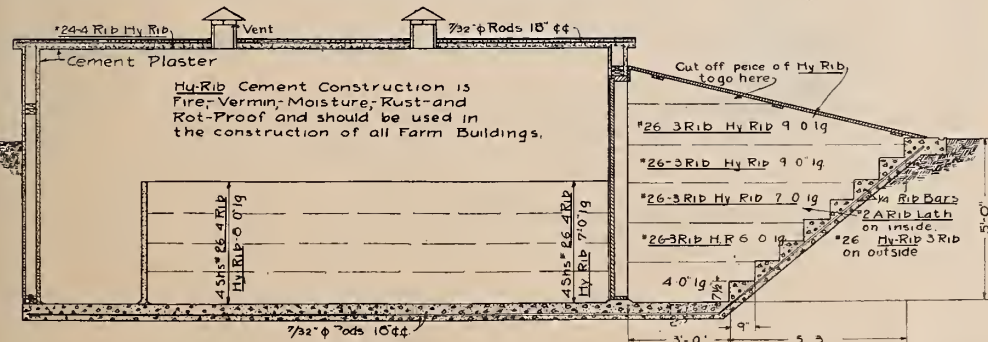
VERTICAL SECTION THRU WALL



PLAN

#### BILL OF MATERIAL FURNISHED BY T C S CO

No	Size	Style	Length
Roof Bent to exact Curve			
21	#24 Hy Rib	4 Rib	12'-0"
Bin Partitions			
8	#26 Hy Rib	4 Rib	3'-4"
4	"	"	5'-0"
4	"	"	6'-0"
8	"	"	7'-0"
8	"	"	8'-0"
Exterior Walls			
12	#26 Hy Rib	3 Rib	3'-10"
10	"	"	8'-0"
10	"	"	10'-0"
6	"	"	10'-11"
Wing Exterior Walls			
2	#26 Hy Rib	3 Rib	4'-0"
2	"	"	6'-0"
2	"	"	7'-0"
4	"	"	9'-0"
6	#24 Ga	3/4 C	5'-0"
22	7/32	φ Rod	20'-0"
8	1/4	Rib Bar	4'-0"
3	"	"	8'-0"
72	Sq Yds	#2 A Rib Lath	



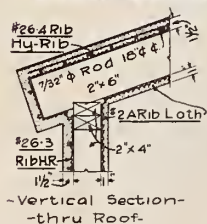
SECTION B B

Concrete Root Cellar

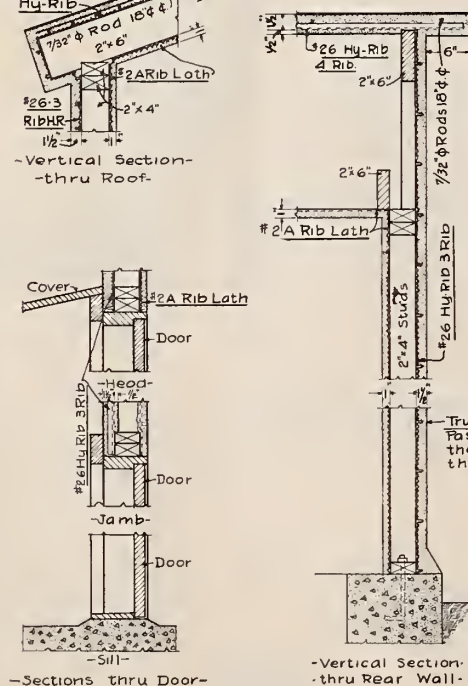
A drain should be placed at the bottom of the stairs to keep out rain water. The side walls of the entrance-way are built the same as the side walls of the cellar. The stairs are reinforced with  $\frac{1}{4}$  inch Rib Bars, as shown. A wooden cover is placed over them to keep out rain.

## HY-RIB & RIB LATH

NO FORMS REQUIRED



Section A-A.



-Vertical Section-  
-thru Rear Wall-

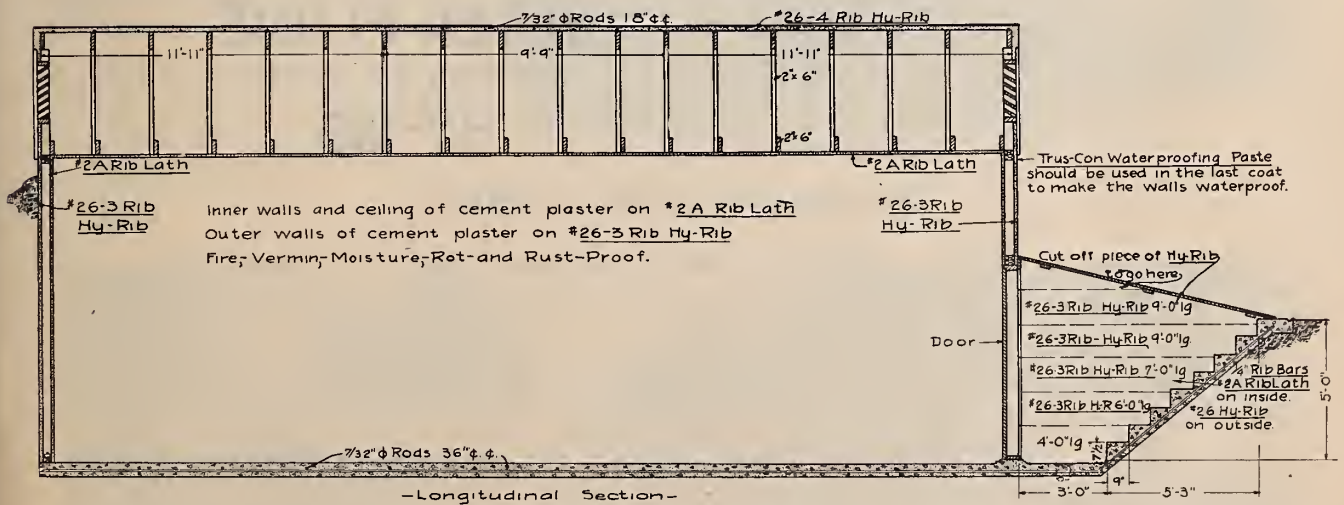
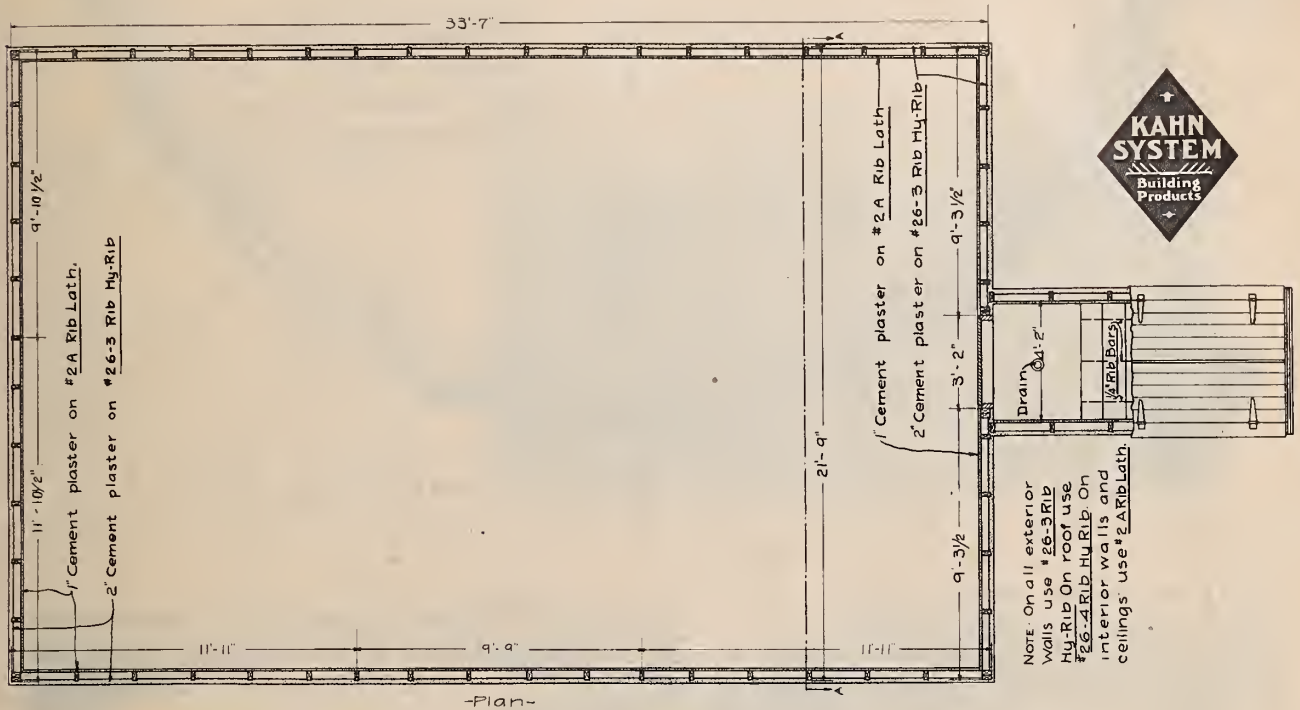
BILL OF MATERIAL FURNISHED BY T. C. S. CO.			
No.	Size	Style	Length
- Exterior Walls -			
6	2x4HxRib	3Rib	5'-0"
4	"	"	8'-0"
44	"	"	10'-0"
50	"	"	12'-0"
- Roof -			
24	2x6HxRib	4Rib	10'-0"
58	"	"	12'-0"
- Wing Exterior Walls -			
2	2x6HxRib	3Rib	4'-0"
2	"	"	6'-0"
2	"	"	8'-0"
4	"	"	9'-0"
- Steps -			
8	1/2"	RibBar	4'-0"
3	1/2"	"	8'-0"
58	3/4x2"	φKod	20'-0"
234	sq	4x5x2 ARib	Lath



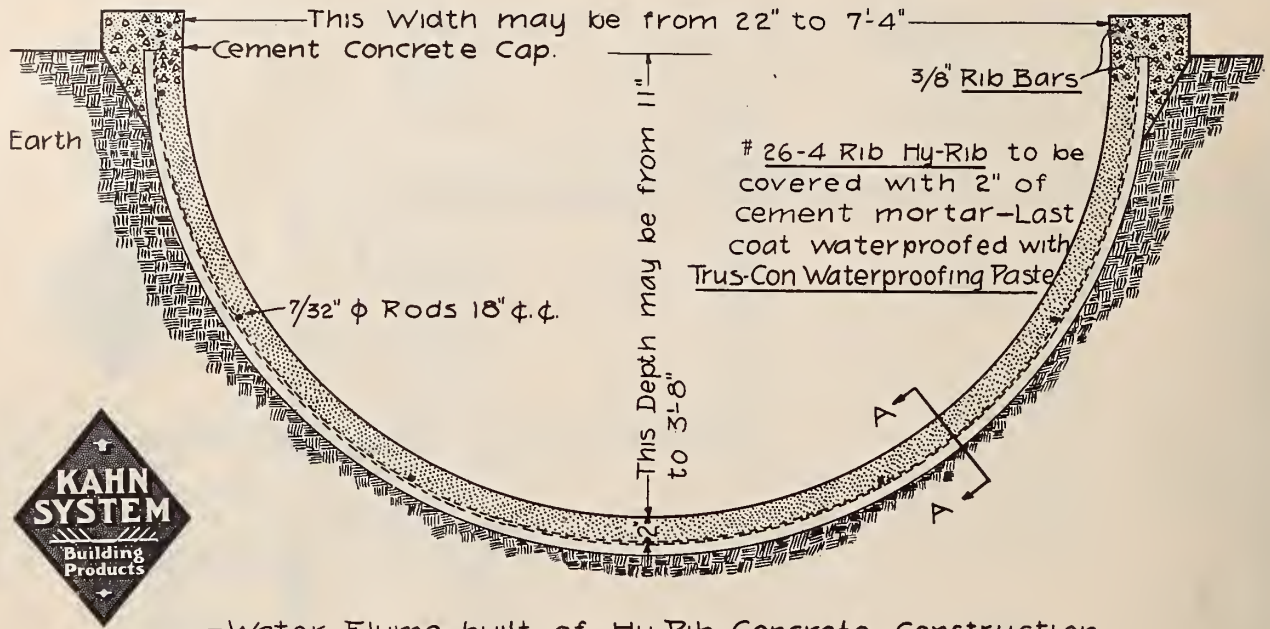
The roof is built of No. 26 4-Rib Hy-Rib covered with 1½ inches of cement concrete and plastered on the underside. ¾ inch round rods are placed 18 inches center to center at right angles to the Hy-Rib to prevent expansion cracks.

70





### Concrete Fruit and Vegetable Cellar.



—Water Flume built of Hy-Rib Concrete Construction—

Sizes of Water Flumes built  
with standard length sheets.

#26-4 Rib Hy-Rib	Size of Flume		Area of Water
Length of Sheet	Width	Depth	
12'-0"	7'-4"	3'-8"	3041 <sup>00</sup>
10'-0"	6'-0"	3'-0"	2036 <sup>00</sup>
8'-0"	4'-9"	2'-4 1/2"	1276 <sup>00</sup>
6'-0"	3'-6"	21"	693 <sup>00</sup>
5'-0"	2'-10"	17"	454 <sup>00</sup>
4'-0"	2'-2"	13"	265 <sup>00</sup>



Section A-A

## WATER FLUME REINFORCED WITH HY-RIB

### HY-RIB CONCRETE FLUMES

In the irrigation districts of California, Colorado and other western and south-western states flumes of different sizes must be built to carry the water to the orchards and gardens.

If the water is run thru ditches dug in the ground a large amount is lost by seepage into the earth. To save this water, flumes should be built of concrete in all sizes from the main canal to the small ditch which carries water into the orchard or garden.

These concrete flumes are easily and cheaply built by using curved Hy-Rib as a reinforcement and key for the concrete. No. 26 4-Rib Hy-Rib is bent to curve at our Shops and when received is simply placed in position in the ditch and covered with cement plaster.

The sheets of Hy-Rib are interlocked at sides and wired together every 24 inches along the sides.

The plaster should be mixed as follows:

Portland Cement.....One Part.  
Sand.....Two Parts.





Portland Cement should be of a good, standard brand and meet the requirements of the Specifications of the American Society for Testing Materials. The sand should be clean and free from loam and well-graded in size.

$\frac{5}{8}$  inch rods shall be placed 24 inches center to center at right angles to the Hy-Rib to prevent expansion.

The last inch of plaster should be waterproofed with Trus-Con Waterproofing Paste.

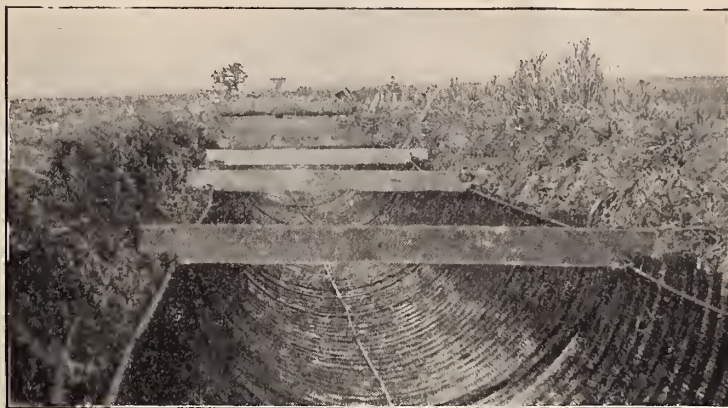
## HY-RIB CONCRETE FARM BRIDGES AND CULVERTS

The many ditches, large and small, that run through a farm must have bridges over them so the farmer will be able to go from one field to another. With Hy-Rib these small bridges and culverts are easily and quickly built. The footings are built of concrete and the Hy-Rib placed upon them, then the concrete road-bed is poured upon the Hy-Rib which acts as centering and reinforcement.

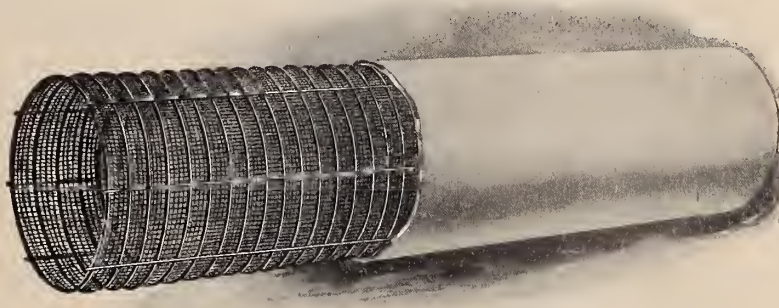
Bridges and culverts up to 6 feet span are built with Hy-Rib as shown in drawings. For longer spans see table of "Highway Bridges or Culverts," Page 76.

The footings should extend below frost line and are made of:

- 1 part Portland Cement;
- $2\frac{1}{2}$  parts Sand;
- 5 parts Broken Stone or Gravel.



Water-Flume for the Cia. Azucarera del Panuco, at El Higo, Mexico.  
Hy-Rib Ready for Concreting.



Hy-Rib for Conduit Pipes.





The road bed is made of;  
1 part Portland Cement;  
2 parts Sand;  
4 parts Broken Stone or Gravel.

After the concrete in the road-bed has set the under side of the Hy-Rib should be plastered with the following mixture:

1 part Portland Cement;  
2 parts Sand.

In all cases use good Portland Cement, meeting the requirements of the Specifications of the American Society for Testing Materials. Use either a broken stone or a gravel which is good, clean, hard and dense, and of such size as will pass through a half-inch ring. Thoroughly mix together the sand and cement dry; next add the broken stone or gravel and water, and mix until absolutely uniform throughout.

For the road-bed a medium wet mixture is applied to the Hy-Rib to the required thickness, and floated smooth. A slight spray of water may come through the Hy-Rib mesh when the concrete is being poured, but there is no objection whatever to this. Where the span is over two feet, one or two temporary supports should be placed under the Hy-Rib at right angles to the ribs. These supports are removed when concrete has set. A dirt fill is placed on the road-bed to prevent wear and horses slipping.

The Hy-Rib may be used straight or curved as shown in the drawings. All Hy-Rib is curved in our shops.

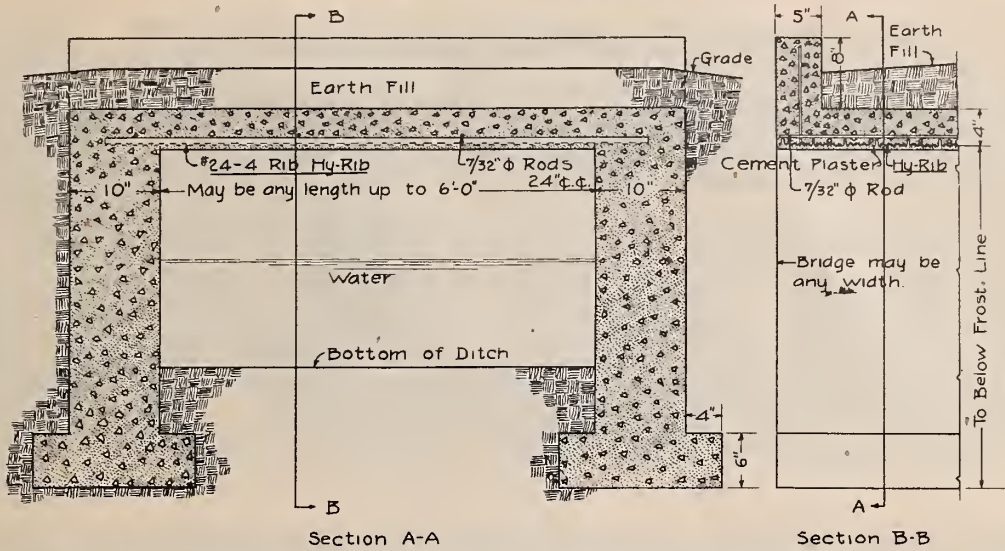
For culverts and bridges over six feet in span we recommend the solid reinforced concrete construction with Kahn Trussed Bars. These bridges are built with a complete wood formwork extending under the entire bridge to hold the concrete until it has thoroughly set. This wood forming should be practically water-tight, and should be supported sufficiently to prevent sagging.

The accompanying tables give the thickness of the concrete required, as well as the amount of reinforcement. The Kahn Trussed Bars are set in place and blocked up  $\frac{3}{4}$  inches above the wood centering and diagonals bent at an angle of 45 degrees. Concrete mixed with one part cement, 2 parts sand and four parts broken stone or gravel is poured into place to the required thickness. After this concrete has thoroughly set, the wood forming underneath may be removed. These wood forms should ordinarily be left in place at least two weeks and in cold or damp weather even longer.

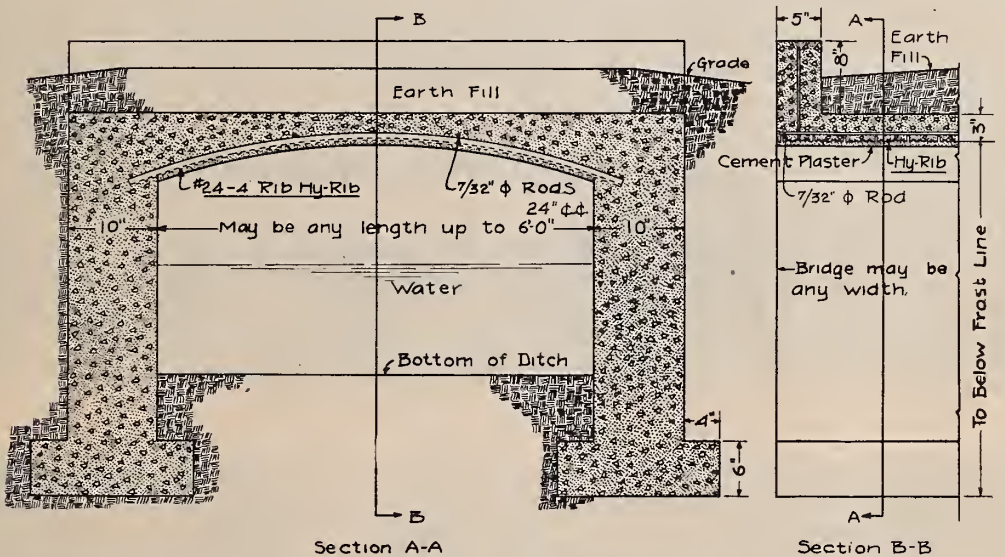
For spans from 6 to 14 feet, the ordinary slab highway bridge is used: that is, the construction consists merely of a slab extending between abutments and reinforced with Kahn Trussed Bars. For spans over 14 and up to 40 feet, we recommend the use of the girder highway bridge, which consists of a series of girders extending between the abutments and supporting the concrete slab. The design for the girders with the amount of reinforcement, etc., is indicated on Table 2, page 76. Properly supported wood formwork is required; reinforcing steel is set in place for both slab and girders and all concrete is poured in at one operation.

Builders will understand that these bridges may all be made of any width required by adding a sufficient number of girders, "B," to support the extra roadway. Complete details will be prepared by our engineers for any bridge in which the KAHN SYSTEM of reinforcement will be used.

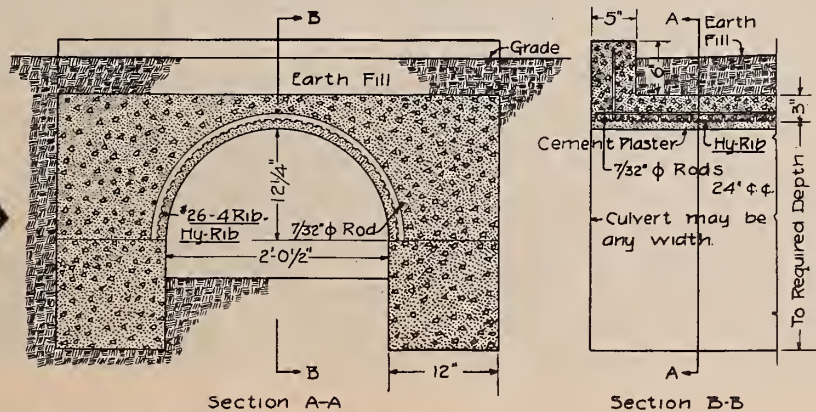




Detail of Farm Bridge showing Flat Hy-Rib in Concrete Construction.



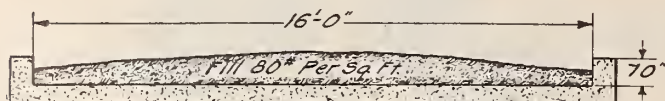
Detail of Farm Bridge showing Curved Hy-Rib in Concrete Construction.



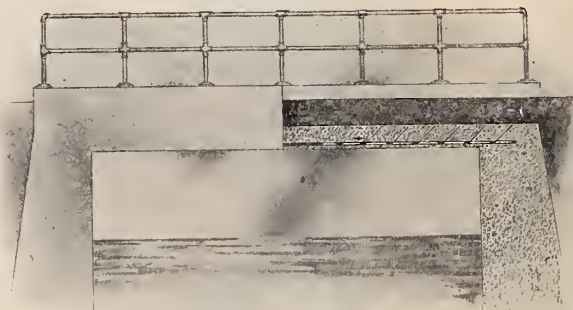
Detail of Culvert showing Curved Hy-Rib in Concrete Construction-



## SLAB HIGHWAY BRIDGES OR CULVERTS



Cross Section

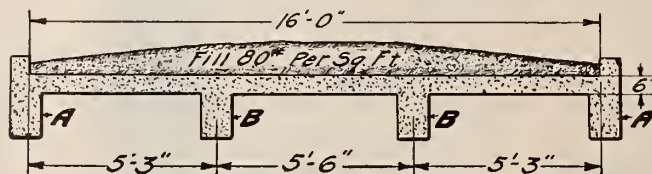


Rib Bars are placed over and at right angles to Kahn Trussed Bars.

Live Load—15 Ton Roller or 100 Pounds Per Square foot.

Span in Feet	Thickness of Slab	KAHN TRUSSED BARS		RIB BARS	
		Size	Spacing	Size	Spacing
4	6"	$1\frac{1}{2}'' \times 1\frac{1}{2}''$	12"	$\frac{3}{8}''$	24"
6	6"	$1\frac{1}{2}'' \times 1\frac{1}{2}''$	8"	$\frac{3}{8}''$	24"
8	7"	$\frac{3}{4}'' \times 2\frac{3}{16}''$	12"	$\frac{3}{8}''$	24"
10	8"	$\frac{3}{4}'' \times 2\frac{3}{16}''$	11"	$\frac{3}{8}''$	24"
12	9"	$\frac{3}{4}'' \times 2\frac{3}{16}''$	10"	$\frac{3}{8}''$	24"
14	10"	$\frac{3}{4}'' \times 2\frac{3}{16}''$	9"	$\frac{3}{8}''$	24"

## GIRDER HIGHWAY BRIDGES



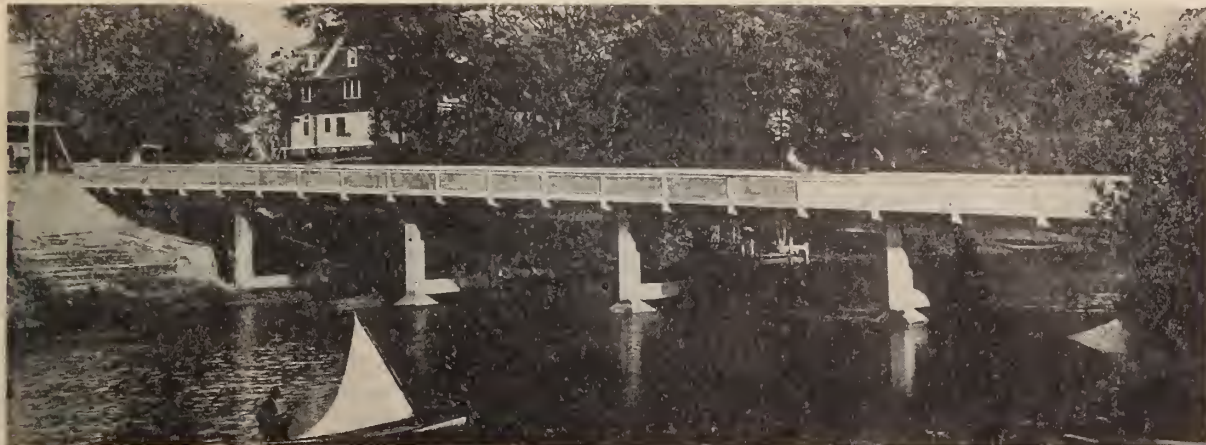
Live Load—15 Ton Roller or 100 Pounds Per Square Foot.

Span in Feet.	BEAM A						BEAM B					
	SIZE	KAHN TRUSSED BARS				SIZE	KAHN TRUSSED BARS					
		Standard Sheared		Center Sheared			Standard Sheared		Center Sheared			
		No.	SIZE	No.	SIZE		No.	SIZE	No.	SIZE		
12	10" x 16"	2	$\frac{3}{4}" \times 2\frac{3}{16}"$	1	$\frac{3}{4}" \times 2\frac{3}{16}"$	12" x 16"	2	$1\frac{1}{2}" \times 2\frac{1}{4}"$	1	$\frac{3}{4}" \times 2\frac{3}{16}"$		
14	10" x 16"	2	$\frac{3}{4}" \times 2\frac{3}{16}"$	*1	$1\frac{1}{2}" \times 2\frac{1}{4}"$	12" x 16"	2	$1\frac{1}{2}" \times 2\frac{1}{4}"$	1	$1\frac{1}{2}" \times 2\frac{1}{4}"$		
16	10" x 18"	2	$1\frac{1}{2}" \times 2\frac{1}{4}"$	1	$\frac{3}{4}" \times 2\frac{3}{16}"$	12" x 18"	2	$1\frac{1}{2}" \times 2\frac{1}{4}"$	*1	$1\frac{3}{4}" \times 2\frac{3}{4}"$		
18	12" x 18"	2	$1\frac{1}{2}" \times 2\frac{1}{4}"$	1	$\frac{3}{4}" \times 2\frac{3}{16}"$	14" x 18"	2	$1\frac{3}{4}" \times 2\frac{3}{4}"$	1	$1\frac{1}{2}" \times 2\frac{1}{4}"$		
20	12" x 20"	2	$1\frac{1}{2}" \times 2\frac{1}{4}"$	1	$1\frac{1}{2}" \times 2\frac{1}{4}"$	14" x 20"	2	$1\frac{3}{4}" \times 2\frac{3}{4}"$	1	$1\frac{3}{4}" \times 2\frac{3}{4}"$		
22	12" x 22"	2	$1\frac{1}{2}" \times 2\frac{1}{4}"$	1	$1\frac{1}{2}" \times 2\frac{1}{4}"$	14" x 22"	2	$1\frac{3}{4}" \times 2\frac{3}{4}"$	1	$1\frac{3}{4}" \times 2\frac{3}{4}"$		
24	12" x 22"	2	$1\frac{3}{4}" \times 2\frac{3}{4}"$	1	$\frac{3}{4}" \times 2\frac{3}{16}"$	14" x 22"	2	2" x 3 $\frac{1}{2}"$	1	$1\frac{1}{2}" \times 2\frac{1}{4}"$		
26	12" x 24"	2	$1\frac{3}{4}" \times 2\frac{3}{4}"$	1	$1\frac{1}{2}" \times 2\frac{1}{4}"$	14" x 24"	2	2" x 3 $\frac{1}{2}"$	1	$1\frac{1}{2}" \times 2\frac{1}{4}"$		
28	12" x 26"	2	$1\frac{3}{4}" \times 2\frac{3}{4}"$	1	$1\frac{1}{2}" \times 2\frac{1}{4}"$	14" x 26"	2	2" x 3 $\frac{1}{2}"$	1	2" x 3 $\frac{1}{2}"$		
30	12" x 28"	2	$1\frac{3}{4}" \times 2\frac{3}{4}"$	1	$\frac{3}{4}" \times 2\frac{3}{16}"$	16" x 28"	2	2" x 3 $\frac{1}{2}"$	1	2" x 3 $\frac{1}{2}"$		
32	12" x 30"	2	$1\frac{3}{4}" \times 2\frac{3}{4}"$	1	$\frac{3}{4}" \times 2\frac{3}{16}"$	16" x 30"	2	2" x 3 $\frac{1}{2}"$	1	2" x 3 $\frac{1}{2}"$		
34	14" x 30"	2	2" x 3 $\frac{1}{2}"$	1	$1\frac{1}{2}" \times 2\frac{1}{4}"$	16" x 30"	3	2" x 3 $\frac{1}{2}"$	2	$\frac{3}{4}" \times 2\frac{3}{16}"$		
36	14" x 32"	2	2" x 3 $\frac{1}{2}"$	1	$1\frac{1}{2}" \times 2\frac{1}{4}"$	16" x 32"	3	2" x 3 $\frac{1}{2}"$	3	$\frac{3}{4}" \times 2\frac{3}{16}"$		
38	14" x 34"	2	2" x 3 $\frac{1}{2}"$	1	$1\frac{1}{2}" \times 2\frac{1}{4}"$	18" x 34"	3	2" x 3 $\frac{1}{2}"$	2	$1\frac{1}{2}" \times 2\frac{1}{4}"$		
40	14" x 36"	2	2" x 3 $\frac{1}{2}"$	1	$\frac{3}{4}" \times 2\frac{3}{16}"$	18" x 36"	3	2" x 3 $\frac{1}{2}"$	2	$\frac{3}{4}" \times 2\frac{3}{16}"$		

\*Bars full length.

FLOOR SLAB.—6" thick, reinforced with  $\frac{1}{2}'' \times 1\frac{1}{2}''$  Kahn Trussed Bars, spaced 12" c. to c. and  $\frac{3}{8}''$  Rib Bars spaced 16" c. to c. at right angles to the Kahn Bars.





[Choptank Bridge, Greensboro, Md., Layton F. Smith, Engineer. Berghaus & Moffitt, Contractors.



Bridge for U. S. Government, Fort Montgomery, N. Y.



Bridge over Meshoppen Creek, Wyoming Co., Pa., Smith & Wells, Engineers; F. D. Bunnell, Contractor.





## HY-RIB CONCRETE FENCES

Solid concrete fences are useful on the farm to serve as wind-breaks, and also as ornamental enclosures around farm houses, etc. Their construction with Hy-Rib is very simple, as no centering or false-work is necessary. Hy-Rib fences can be built to any height desired. We illustrate in our details two types of fences; one with the entire walls solid, and the other a fence consisting of a series of concrete rails.

The former fence consists of 8x8 inch concrete posts, which are usually cast on the ground and set in place with panels between them. The posts are provided with narrow slots into which the Hy-Rib is inserted. The posts are ordinarily set so as to accommodate sheets of Hy-Rib from 6 to 12 feet in length. For the solid fence the Hy-Rib is all set in place and plastered with cement mortar on both sides to the required thickness. The fence with openings between the concrete boards is built similarly, except that the Hy-Rib sheets are separated the required number of inches apart.

The top of the fence may be finished with a rail and cap, either built in place or cast previously, or the top of the fence may be left perfectly plain. The Hy-Rib fence in either of these forms will be found useful in many places, such as around pens, wind-breaks and enclosures of all kinds.



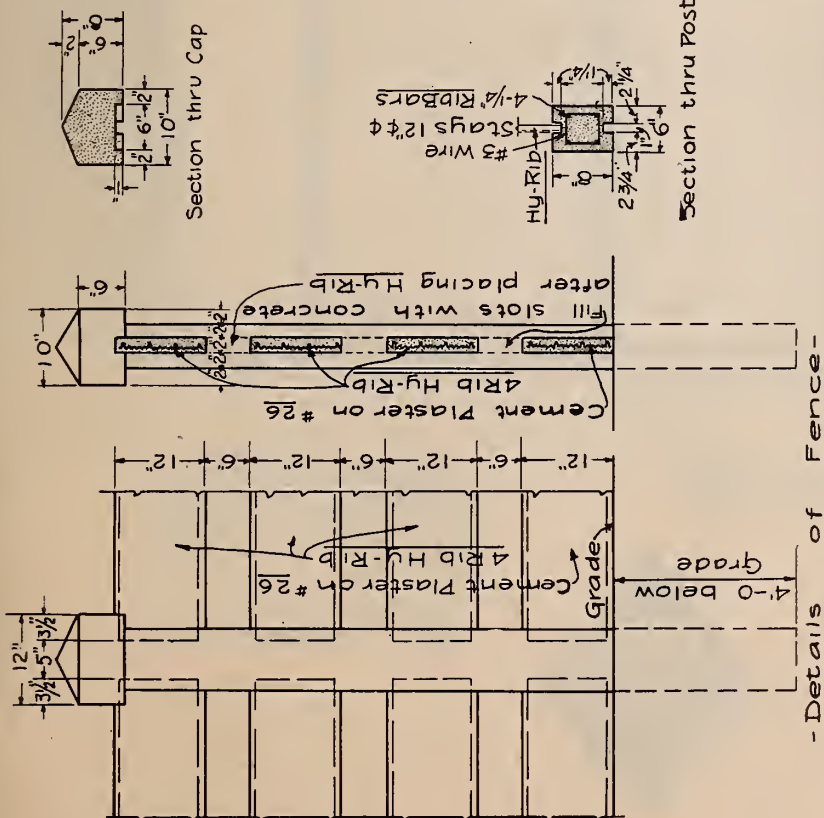
Hy-Rib Fence for Van Perrine Residence, Fort Wayne, Ind.  
Chas. R. Weatherhogg, Architect.  
Hy-Rib Spans Horizontally Between Reinforced Concrete Posts.



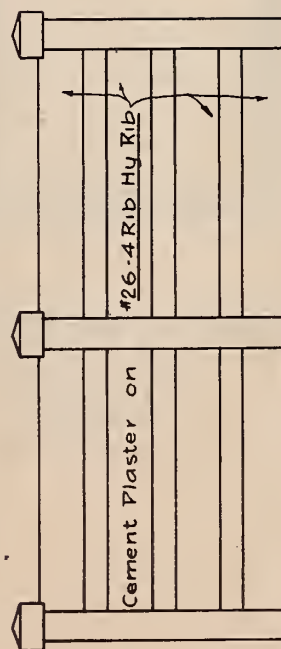
Hy-Rib Fence—Ernest G. Swift, Detroit, Mich.  
Note Hy-Rib Garage at Right.



-Fences Reinforced with Hy-Rib-	Length Thickness of Panel of Panel	Reinforcement
	6 Feet 2 inches	#26-3 Rib Hy-Rib, or #28-4 Rib Hy-Rib.
	8 Feet 2 inches	#24-3 Rib Hy-Rib, or #26-4 Rib Hy-Rib.
	10 Feet 2 inches	#26-4 Rib Hy-Rib.
	12 Feet 2 1/2 inches	#24-4 Rib Hy-Rib.



## -Details of Fence-



### —Elevation of Fence—

**FENCE** REINFORCED WITH **HY-RIB**  
NO FORMS REQUIRED FOR PANELS

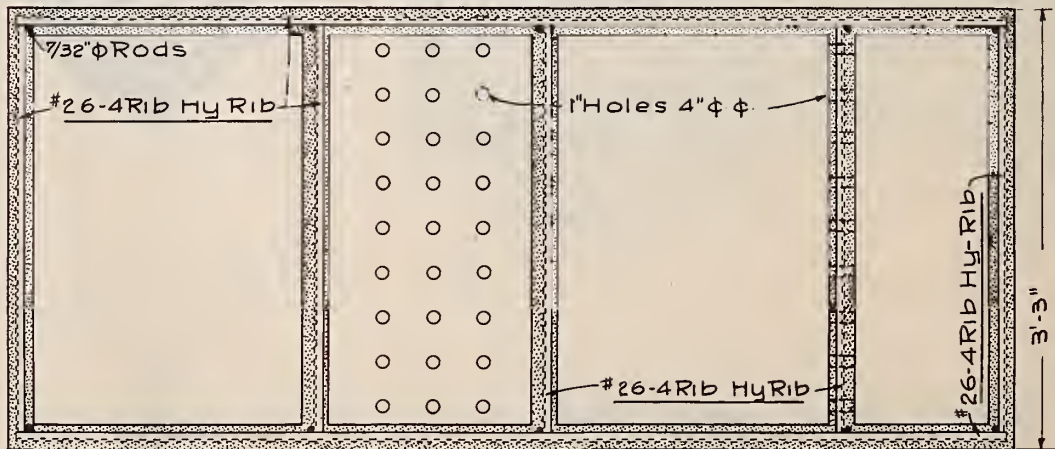
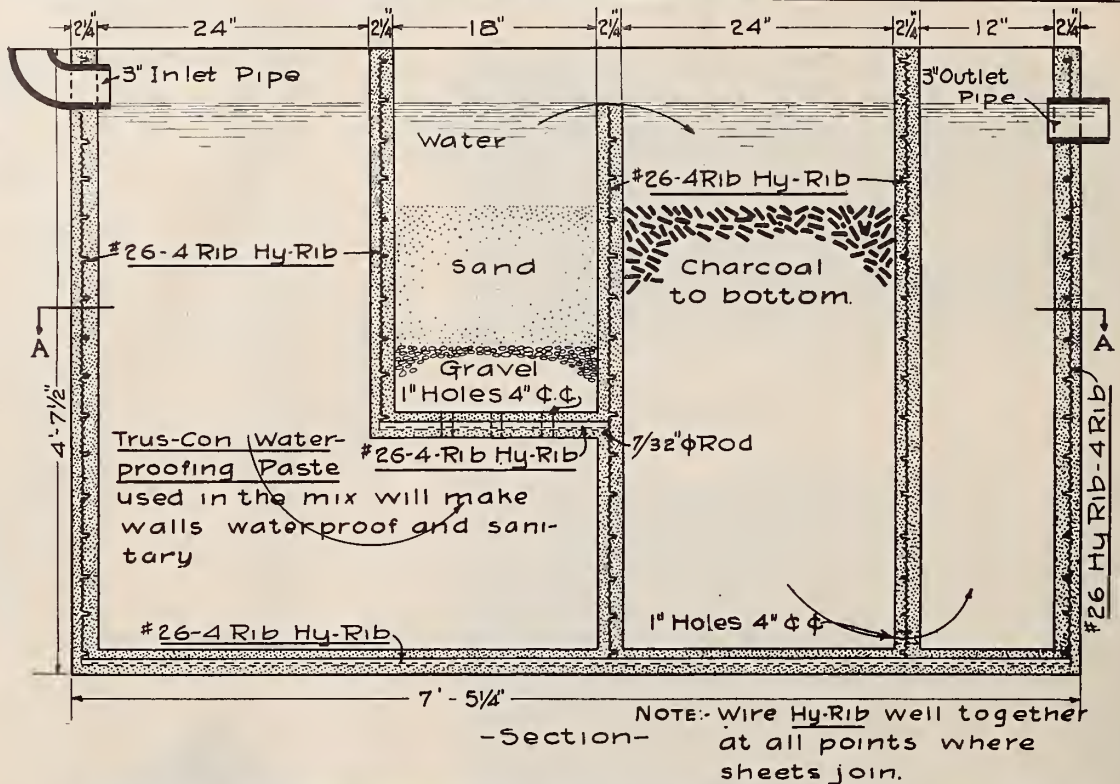


## Two Types of Hy-Rib Concrete Fences.



## -Front Elevation of Fence-

**FENCE** REINFORCED WITH **HY-RIB**  
NO FORMS REQUIRED FOR PANELS



-Plan at A-A

**CONCRETE WATER FILTER**  
REINFORCED WITH  
**HY-RIB**  
NO FORMS REQUIRED



**BILL OF MATERIAL  
FURNISHED BY T. C. S. CO.**

No	Size	Style	Length
4	#26 Hy-Rib	4 Rib	1'-8"
23	"	"	3'-0"
14	"	"	7'-3 1/2"
45" 7/32" $\phi$ Rod			
40# Trus-Con Waterproofing			





## HY-RIB CONCRETE WATER FILTER

A concrete filter for obtaining pure water may be built of Hy-Rib and cement plaster. No. 26 4-Rib Hy-Rib is used and the sheets are wired together every 12 inches at the side laps and to the  $\frac{7}{8}$  inch round rods at each rib at the corners. This is necessary if the filter sets above ground as the water pressure from inside would force the sides apart. A base of concrete may be laid and the Hy-Rib frame set upon it or the frame turned upside down and the bottom plastered. After it has set the filter may be turned over and the rest plastered. Trus-Con Waterproofing Paste should be used in the water used in mixing the concrete to make the filter waterproof.

It is better to place the filter in the ground so that about 6 inches of the top projects above the ground level.

Wood pegs, one inch in diameter, are placed in the bottom of the sand compartment and in the wall between the charcoal and outlet compartments to form the holes for the water to pass thru. These pegs are removed after the concrete has set.

About six inches of gravel and one foot of clean sand should be placed in the sand basin. The charcoal basin is filled to a depth of three feet with charcoal, for stagnant water, but should consist of limestone and brick bats for rain water. The filter will separate water from all impurities except such germs as can only be removed by distilling or boiling. In the oil fields this filter produces clear, sparkling water from polluted streams and is kept in condition by simply skimming the oil and grease off the receiving basin once a day.

Its capacity is large and it may be constructed of sufficient width to receive the flow of an entire brook where it enters the farm, thus insuring pure water for all purposes, as stock, steam boilers and household use. The filter can be made as small as two feet square and four feet long, but the most practical size is four feet deep, eight feet long and as wide as capacity may require, calculating about five gallons per minute for every foot of width. The capacity, however, depends much upon the condition of the water to be filtered.

The bottom of the receiving basin will retain much sediment which must be removed before reaching the openings into the sand basin. This sediment is a heavy, slimy deposit which makes a good fertilizer for flower and vegetable gardens. The sand and gravel also become coated with a lightweight muck which reduces the capacity of the filter; however, the water is purer after the sand has become partially coated. The sand must be renewed or removed and washed from one to six times a year, depending upon the amount of impurities contained in the water.

The charcoal, being an air mixer, rarely ever requires attention and about two cleanings per year will answer for the other basins. In Western States where alkali abounds, a lump of alum dropped into the receiving basin once a month does much to clarify the water.

## CONCRETE SEPTIC TANK

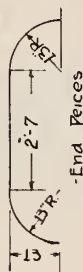
REINFORCED WITH

## HY-RIB & RIB BARS

NO FORMS REQUIRED

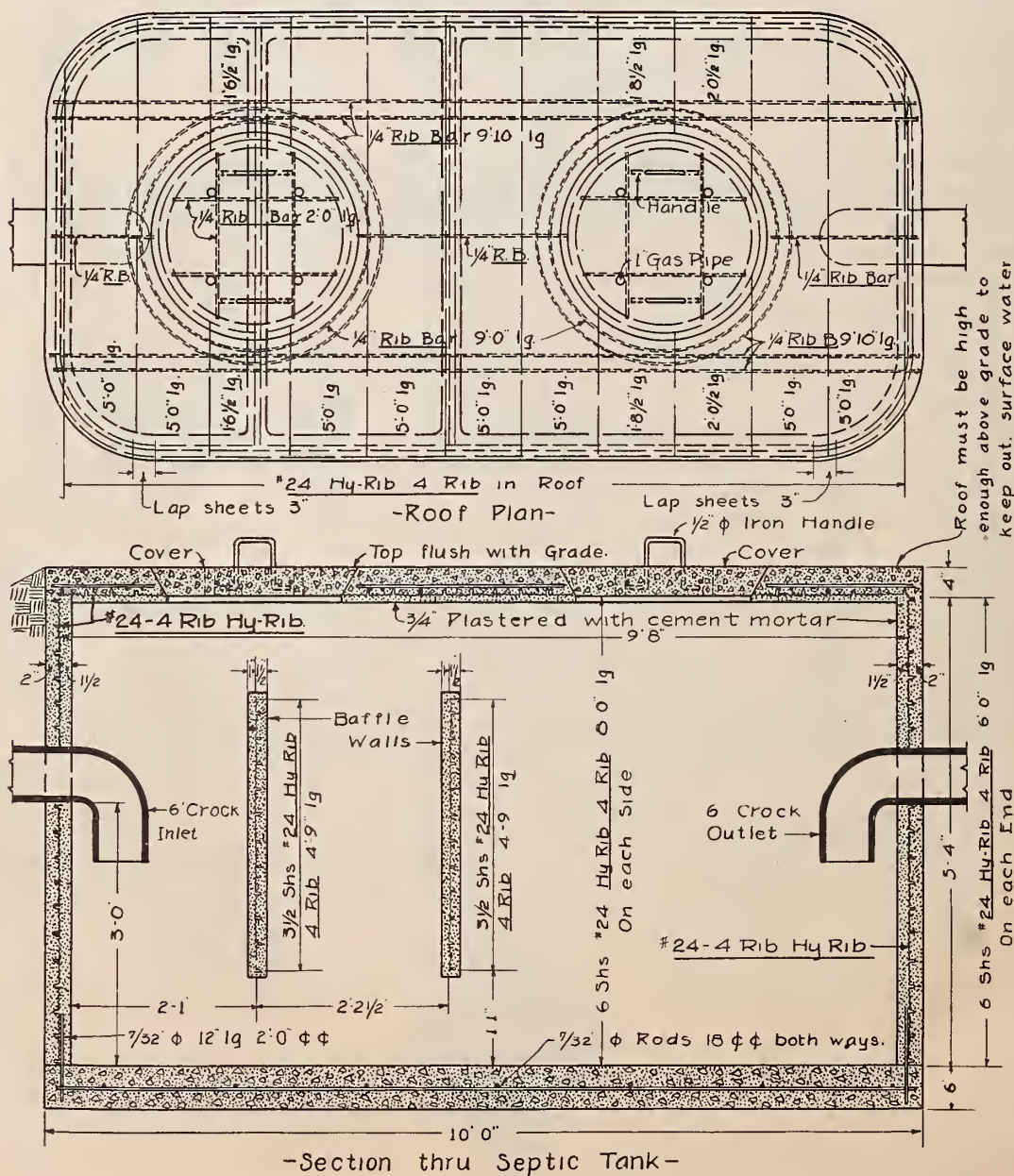
HY-RIB SHIPPED BENT TO CURVE  
CONCRETE WATERPROOFED WITH

## TRUS-CON WATERPROOFING PASTE



BILL OF MATERIAL  
FURNISHED BY T.C.S. CO.

No.	Size	Style	Length
2	#24 Hy-Rib	4 Rib	1'6 1/2"
2	"	"	1'8 1/2"
2	"	"	2'0 1/2"
2	"	"	4'0"
8	"	"	5'0"
12	"	"	8'0"
End Pieces curved as shown			
12	#24 Hy-Rib	4 Rib	6'0"
1	1/4"	Rib Bar	1'2"
9	1/4"	"	1'10"
1	1/4"	"	2'5"
2	1/4"	"	9'0"
6	1/4"	"	9'10"
5	7/32"	φ Rod	20'0"
50 lb Trus-Con W.P. Paste			



-Section thru Septic Tank-





## HY-RIB CONCRETE SEPTIC TANK

Cesspools, or pits dug into the ground to take care of refuse from bathrooms, etc., are the greatest spreaders of disease on the farm. By building an inexpensive septic tank, all danger from sewage is removed. Septic tanks are nothing but long, underground, water-tight cisterns through which the sewage passes very slowly and evenly. Located underground, they are warm and dark, providing ideal conditions for development of the bacteria, little germs which eat up the sewage and render it harmless in much the same way as another kind causes cider to ferment. To prevent the bacteria (which live in the frothy sludge) from being disturbed, crosswalls, called baffle boards, are placed to break up the current of the inflowing sewage. The purified sewage, merely clean water, may be discharged into the farm drain tile.

Locate the septic tank where it can be placed entirely with the side walls underground and out of danger of flood waters. Before plastering, set in the 6-inch inlet and outlet drains at the same height as shown. To aid further in breaking up the currents and keeping out too much air, use elbow bends, so that the sewage in the tank will cover the mouth of the tile.

The baffle boards are formed by placing No. 24 4-Rib Hy-Rib as shown, wiring Hy-Rib well to side wall and plastering on both sides. These boards reach entirely across the tank, project above the sewage, and extend to within one foot of the bottom.

The bottom slab is poured first with  $\frac{7}{8}$ -inch round rods in the center, 18 inches center to center, both ways, to keep it from cracking. Place the  $\frac{7}{8}$ x12-inch rods to fasten the first row of Hy-Rib while the concrete is still wet. Place the No. 24 4-Rib Hy-Rib to form the walls and baffle boards and plaster as shown.

When the side walls are a week old the top slab may be poured. Place the No. 24 4-Rib Hy-Rib and  $\frac{1}{4}$ -inch Rib Bars and pour concrete 4 inches thick.

Wood forms for the cover openings are held in place by a few boards underneath, which also help support the Hy-Rib that does not run across. 2x4 pieces resting on the bottom of the tank hold the board in place. Backplaster the underside  $\frac{3}{4}$ -inch after the boards are removed.

While building the manhole covers, insert in them four short lengths of 1-inch gas pipe for ventilation.  $\frac{1}{2}$ -inch round bars bent to shape will serve as handles. All Hy-Rib comes bent ready to place.

Trus-Con Waterproofing Paste used in the water of the last  $\frac{3}{4}$ -inch coat of the concrete will keep the sewage from seeping out.



Concrete Septic Tank.

## CONCRETE CISTERN

REINFORCED WITH

## HY-RIB & RIB BARS

NO FORMS REQUIRED

HY-RIB SHIPPED BENT TO CURVE  
CONCRETE WATERPROOFED WITH

## TRUS-CON

## WATERPROOFING PASTE

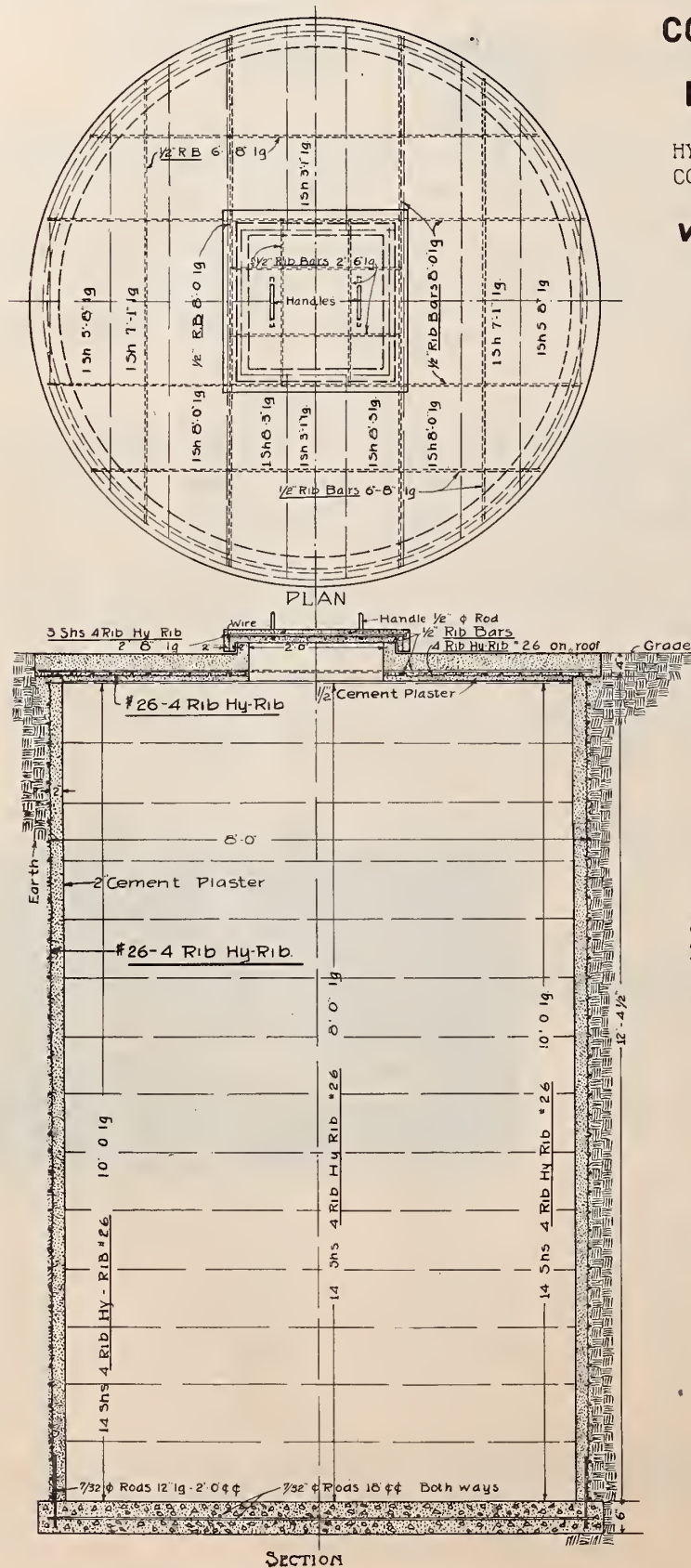
CAPACITY 4310 GALLONS

BILL OF MATERIAL—  
FURNISHED BY T. C. S. CO

No	Size	Style	Length
3	*26 Hy Rib	4 Rib	2'-0"
2	"	"	3'-"
2	"	"	5'-8"
2	"	"	7'-1"
2	"	"	8'-0"
2	"	"	8'-3"
Curved to 8'-0" Radius.			
14	*26 Hy Rib	4 Rib	8'-0"
28	"	"	10'-0"
4	1/2"	RibBar	2'-6"
4	1/2"	"	6'-8"
4	1/2"	"	8'-0"
5	7/32"	φ Rod	20'-0"
120* TrusCon W-P Paste			

NOTE -Excavate hole large enough to place My-Rib in, then plaster on inside of Cistern only—Fill dirt back on outside after plastering

Hy:Rib Cement Constructed  
Cisterns are sanitary and  
easily cleaned - Tru:Con  
Waterproofing Paste used in the  
last coat will prevent leakage,  
or outside water seeping in.







### HY-RIB CONCRETE CISTERNS

Concrete for cisterns has many advantages because it is monolithic and can be made absolutely waterproof. It is absolutely clean and sanitary and permanent in every way. Hy-Rib has many advantages in building concrete cisterns. It comes from our Shops bent to the exact circle and is merely set in place and the concrete plaster applied directly to it to the required thickness. It does away entirely with the expensive form work and the unsatisfactory plan of attempting to plaster against loose earth. The bottom slab is built first and the anchor rods 12 inches long set into the wet concrete to tie the walls to the slab. The Hy-Rib is next set in place and thoroughly wired together. Cement plaster is applied to the interior. This plaster is the same as that specified on page 8, which should be thoroughly waterproofed by using Trus-Con Waterproofing Paste in the water used in mixing. Use one part Paste to 12 parts water. After the concrete wall has set properly the Hy-Rib for the top slab is set in place and the concrete applied to the proper thickness. The underside is then plastered with cement plaster. The cover for the cistern is built with concrete reinforced with Hy-Rib and Rib Bars. Two  $\frac{1}{2}$ -inch round rod handles are provided in the concrete for lifting the cover.



### HY-RIB CONCRETE WATER TROUGHS

Concrete troughs are always more desirable than wooden troughs because they are clean and sanitary, never get sour even with wet feed, and do not rot and become infested with germs. They last forever and do not require replacing from time to time. Hy-Rib is especially useful in building such troughs as there is no centering required, and in this way greatly reduces their cost. We have shown a number of typical designs for both rectangular and circular troughs. The Hy-Rib is shipped bent to exact curves for these round troughs. Concrete is applied in the form of a plaster directly to the Hy-Rib sheets. The troughs are waterproofed by the use of Trus-Con Waterproofing Paste in the last plastered coat on the inner side of the troughs.

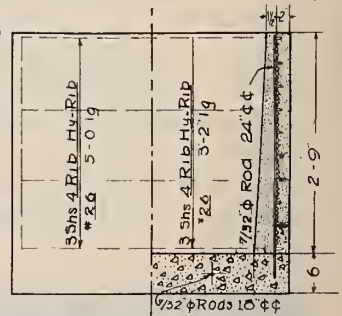
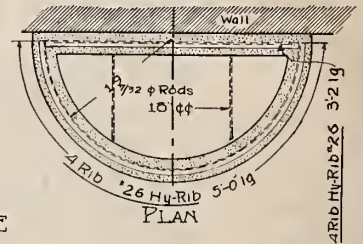


Water Tank (Hy-Rib), Jefferson Powder Co., Birmingham, Ala.  
Hy-Rib Bent to Exact Curve in Our Shops.

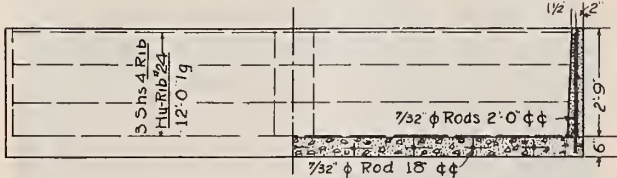
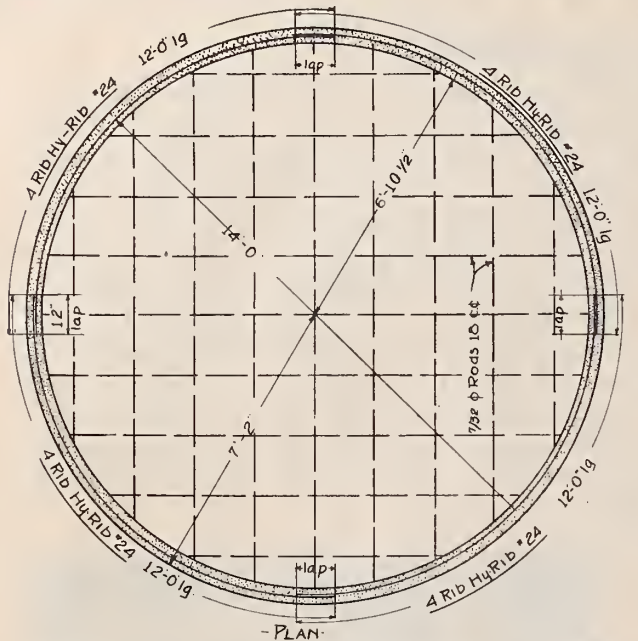


## CONCRETE WATER TROUGHS REINFORCED WITH HY-RIB

HY-RIB IS SHIPPED  
BENT TO EXACT CURVE  
NO FORMS REQUIRED  
CONCRETE WATERPROOFED  
WITH  
**TRUS-CON  
WATERPROOFING  
PASTE**

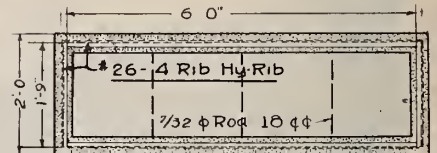


1/2 ELEVATION 1/2 SECTION  
Scale 1" = 1'-0"

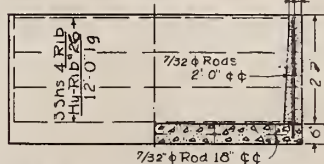
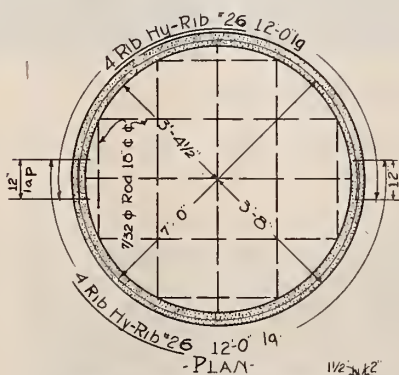


1/2 ELEVATION

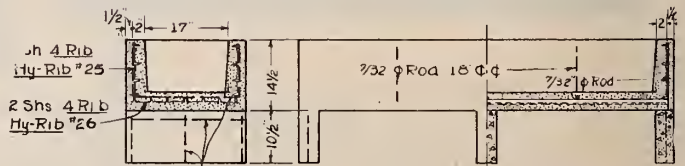
1/2 SECTION  
Scale 1/2" = 1'-0"



-PLAN-



1/2 ELEVATION 1/2 SECTION  
Scale 1/2" = 1'-0"

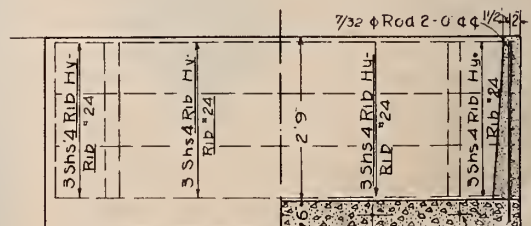


SECTION

1/2 ELEVATION

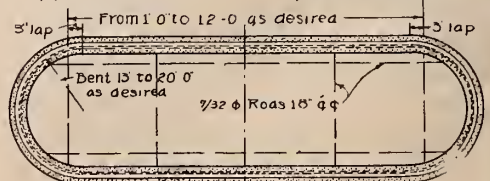
1/2 SECTION

Scale 3/4" = 1'-0"



1/2 ELEVATION

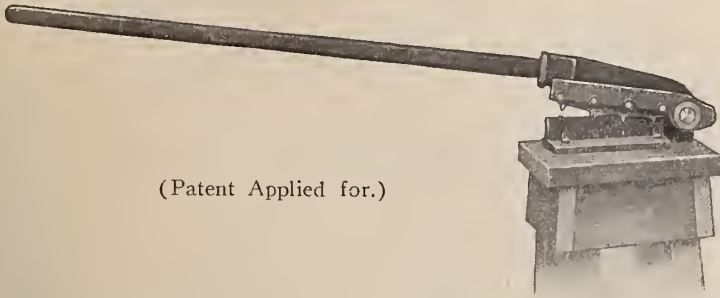
1/2 SECTION



PLAN  
Scale 3/4" = 1'-0"

Hy-Rib Cement Construction is best for Water and Feed Troughs as they are easily cleaned and disinfected there are no slivers to run into mouths or eyes of stock Trus-Con Waterproofing Paste should be used to prevent leaks.





(Patent Applied for.)

## HY-RIB CUTTER. Price \$20.00

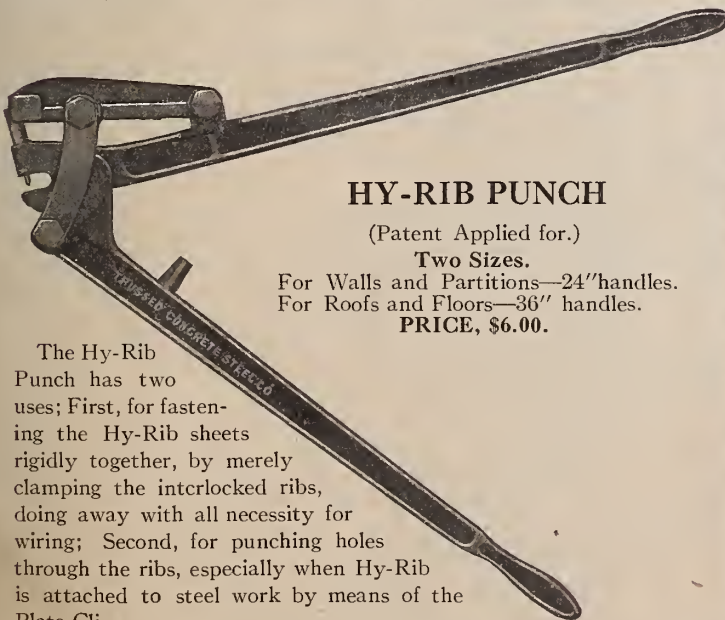
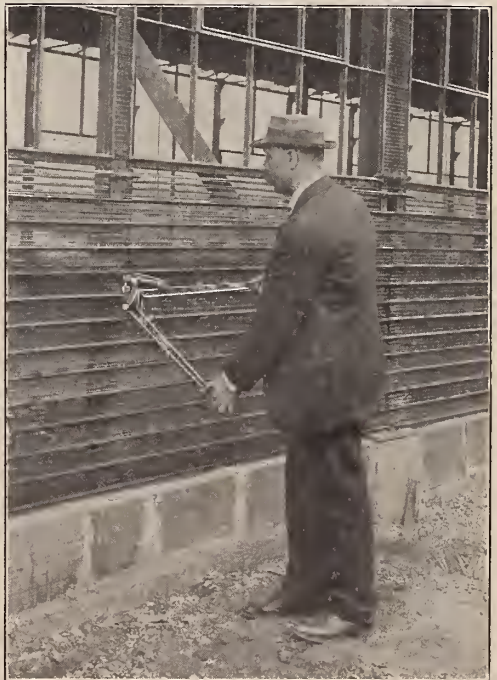
For Shearing Both.  
4-Rib and 3-Rib Hy-Rib.

For ordinary work, where Hy-Rib must be cut to various lengths, and fitted around openings, most builders find it is more economical to order Hy-Rib in standard lengths, and cut the sheets to the required size on the job.

The Hy-Rib Cutter is a portable shear for cutting Hy-Rib sheets to any desired length. It weighs only 90 pounds, and can be readily carried by one man from one location to another. In jobs of any size, the Hy-Rib Cutter pays for itself many times over. It saves time, labor and expense over the use of the ordinary tin-smith's tools. Many of our representatives have Hy-Rib Cutters that they can rent for use on small-sized jobs.

Hy-Rib Cutters are furnished complete, ready for mounting on suitable base. The shear blades are detachable for sharpening.

The Hy-Rib Cutter is designed so as to shear either 3-Rib or 4-Rib Hy-Rib without any change or adjustment.



## HY-RIB PUNCH

(Patent Applied for.)

Two Sizes.

For Walls and Partitions—24" handles.

For Roofs and Floors—36" handles.

PRICE, \$6.00.

The Hy-Rib Punch has two uses; First, for fastening the Hy-Rib sheets rigidly together, by merely clamping the interlocked ribs, doing away with all necessity for wiring; Second, for punching holes through the ribs, especially when Hy-Rib is attached to steel work by means of the Plate Clips.

The use of the punch in Hy-Rib sidings is shown on opposite page. The edge of the punch is lined up with the edge of the Plate Clip, which can be readily seen through the Hy-Rib mesh. The small point of the punch engages in the hole of the Clip and thus perfectly aligns the hole in the Hy-Rib with that in the Clip. A short piece of wire or a nail slipped through the hole fastens the Hy-Rib rigidly in place. The operation is very rapid and simple, and much less expensive than wiring Hy-Rib to steel work.

On roofs built with heavy Hy-Rib a punch with 36 inch handles is used so as to obtain more power and allow the operator to stand erect while working. Otherwise, the use of the punch is the same as for walls.



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